PSYCHOMETRIC DEVELOPMENT

OF THE

ADAPTIVE LEADERSHIP COMPETENCY PROFILE

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This study documented the psychometric development of the Adaptive Leadership Competency Profile (ALCP). The ALCP was derived from a qualitative database from the National Science Foundation project (NSF 9422368) and the academic body of literature. Test items were operationalized, and subject matter experts validated 11 macro-leadership competencies and 65 items. Rasch rating scale measurement models were applied to answer the following questions: (a) How well do the respective items of the ALCP fit the Rasch rating scale measurement model for the 11 scales of the ACLP? (b) How well do the person's abilities fit the Rasch rating scale measurement model, using the 11 scales of the ALCP? (c) What are the item separation and reliability coefficients for the 11 ALCP scales? (d) What are the person separation and reliability coefficients for the 11 ALCP scales?

This study also sought to discern whether the ALCP could predict leader effectiveness as measured by the likelihood ratio index and frequency of correct predictions indices. The WINSTEPS and LIMDEP programs were used to obtain Rasch calibrations and probit estimates, respectively. The ALCP profiles the frequency and intensity of leadership behavior. Composite measures were calculated and used to predict leadership effectiveness. Results from this study validated 10 competencies and 55 items.

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CHAPTER 1

INTRODUCTION

An interdisciplinary research team at the University of North Texas was funded by the National Science Foundation (NSF 9422368) and a consortium of executives called the Leadership Council (created by CEOs of Procter & Gamble and Xerox, and the American Society for Quality Control) to study "Leadership Issues" and "Transformation Practices to Quality Organizations." The research team was intact for 4 years (1995-1999). The aim of this research project was to provide practical applications for managers already engaged in managing leadership issues in team settings and to advance the understanding of work teams in knowledge settings. The NSF research team attempted to address numerous research questions, including the following: How is leadership defined? How is leadership effectiveness defined? What is the relationship between organizational culture and effectiveness? How is the role of the supervisor/manager changing? How do team members become leaders? What role does leadership play in problem solving, team development, and team effectiveness? Are key leader behaviors for knowledge work teams different from those for production teams? Does one organizational structure/process/strategy work better for transitioning to collaborative work structures than another? A result of the NSF study was the development of a qualitative database—inclusive of approximately 600 interviews with organization employees from various levels of the organization.

Competency assessment methods advocated by Spencer, McClelland, and Spencer (1990) were used to analyze the qualitative database (i.e., employee interviews) for "effective" leadership behaviors / competencies. As a result, the identified competencies from the NSF research project and those found in the academic body of literature were used to construct an initial Adaptive Leadership Competency Profile (ALCP 1.0).

Rationale for the Study

This study was conducted for a number of reasons:

1. A leadership competency profile that is congruent with the 21st century business culture is needed.

2. A useful and effective tool for identifying and selecting potential leaders who may not appear on traditional predictors of transactional leadership inventories needs to be developed (Bass, 1990).

3. Improvement in the psychometric properties of leadership inventories/profiles is needed.

4. Application of the Rasch rating scale measurement model to the field of Training and Development is needed.

5. The researcher was interested in test development and needed to acquire an understanding of the test development process.

Theoretical Framework

The theoretical framework of the ALCP has two influential roots—Hauenstien's (1998) theory and the competency assessment methods of Spencer et al. (1990). According to Krathwohl, Bloom, and Masia (1964), modern research in the behavioral sciences raises serious questions about the value of simple distinctions among the cognitive, affective, and psychomotor domains. Krathwohl et al. indicated that the basic question posed by modern behavioral science research is whether or not humans ever think without feeling or act without thinking. It seems clear that an individual responds as a total organism or whole person whenever he/she responds. Hauenstien has asserted that the traditional perspective of viewing the cognitive, affective, and psychomotor domains as separate and unconnected entities is artificial. He has posited an instructional system that includes a composite fourth domain, a behavioral domain, as a means of consolidating and unifying the domains; this is often referred to as the composite or acting domain.

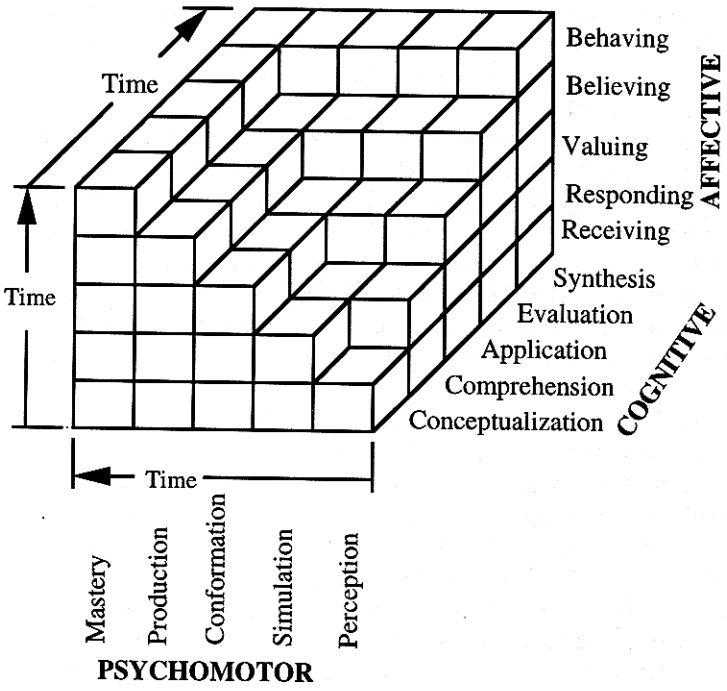


Figure 1. Components of the behavioral domain (Hauenstien, 1998, p.112).

Figure 1 shows the building blocks of the behavioral domain, which is a composite of redefined cognitive, affective, and psychomotor domains. All three domains are essential for each block and level for whole learning. Hauenstien's (1998) theory provides a holistic taxonomy of human behavior, one of undifferentiation and integration. The composite behavioral domain has five ordered categories of educational objectives: acquisition, assimilation, adaptation, performance, and aspiration. Acquisition combines the categories of receiving, conceptualization, and perception. The purpose of the acquisition objective is to enable learners to acquire new concepts, ideas, vocabulary, and information (Hauenstien, 1998). Assimilation combines the categories of responding, comprehension, and simulation. The purpose of the assimilation objective is to enable the

learner to comprehend thoroughly, the newly acquired concept or idea (Hauenstien, 1998). Adaptation combines the categories of valuing, application, and conformation.

> The purpose of the adaptation objective is to enable learners to develop a degree of skill or competence in using their knowledge and/or abilities to solve problems in real or simulated situations which are similar or different from the context in which the knowledge, skill, and disposition was first encountered. (Hauenstien, 1998, p. 114)

Performance combines the categories of believing, synthesis, and mastery. The purpose of the performance objectives is to enable students to use their knowledge, dispositions, and skills on an ongoing basis (Hauenstien, 1998, p. 114). Aspiration combines the categories of behaving, synthesis, and mastery. "The purpose of the aspiration objective is to enable learners to increase their level of understandings, dispositions, and skills to a higher levels of expertise" (Hauenstien, 1998, p. 115).

Modern competency research in industry dates from the late 1960s and early 1970s. An increasing number of studies have indicated that traditional academic aptitude and knowledge content tests did not predict job performance or success in life and were often biased against minorities (McClelland, 1973). These findings led Spencer et al. (1990) to identify "competency" variables that did predict job performance and that were not biased or, at least, were less biased, by race, sex, or socioeconomic factors. Spencer et al. defined competencies to be

> motives, traits, self-concepts, attitudes, or values, content knowledge, or cognitive or behavioral skills—any individual characteristic that can be measured or

> counted reliably and that can be shown to differentiate significantly between superior and average performers, or between effective and ineffective performers. (p. 6)

Hauenstien (1998) offered a theory for understanding the developmental levels of human behavior, and Spencer et al. provided a methodology for competency research.

Many of the published leadership inventories are based on traditional predictors of transactional leadership (Bass, 1990), whereas the ALCP is eclectic and rooted to situational leadership, servant leadership, contingency theory, transformational leadership, new science theory, and 600 interviews with organizational employees that defined effective leaders and leadership.

Potential Value of the Study

The outcome of this study will be of interest primarily to three types of research consumers: CEOs, upper leadership/management executive teams, and human resource development professionals (HRD). From an organizational perspective, the CEO will be able to craft organizational development strategies through the use of innovative leadership training and development programs. The upper leadership team will have a 360-degree performance assessment tool (ALCP) to assist in identifying, selecting, and developing organizational leaders. Human resource professionals will be able to focus the organization's leadership training program(s).

Purpose of the Study

The purpose of this study was to develop an Adaptive Leadership Competency Profile (ALCP) and to determine the associated psychometric properties utilizing the Rasch rating scale measurement model.

Research Questions

1. How well do the respective items of the ALCP fit the Rasch rating scale measurement model for the 11 scales of the ACLP?
2. How well do the person's abilities fit the Rasch rating scale measurement model, using the 11 scales of the ALCP?
3. What are the item separation and reliability coefficients for the 11 ALCP scales?
4. What are the person separation and reliability coefficients for the 11 ALCP scales?
5. Does the ALCP predict leader effectiveness as measured by the Likelihood Ratio Index and Frequency of Correct Predictions indices?

Limitations

The following are limitations of this study:

1. Data were collected on 7 leaders from 32 subordinates and 9 peers.
2. The ALCP is a newly created performance assessment tool; the scales have not been validated beyond this study.

Delimitations

The following are the delimitations of this study:

1. Organizations that include 100 employees or more were eligible to participate in this study.
2. Organizations were required to have five or more leaders willing to participate.

3. Organizations were required to have access to the Internet.

Definition of Terms

For the purpose of this study, brief definitions of the key terms are provided.

Adaptation: applying what is known to various situations or problems in relation to one's skills and values (Hauenstein, 1998).

Adaptive leadership: leadership that uses knowledge and/or abilities to solve problems that are similar or different from the context in which the knowledge, skill, and disposition was first encountered.

Acquisition: the gaining of new information/content (Hauenstein, 1998).

Aspiration: seeking to do better, to excel, in accord with one's beliefs and skills (Hauenstein, 1998).

Assimilation: working the new knowledge into what is already known (Hauenstein, 1998).

Domain: a distinctly delimited sphere of knowledge or intellectual activity. In this study, the domains are posited as the cognitive domain (the process of knowing and development of intellectual abilities and skills); the affective domain, the development of dispositions--that is, prevailing tendencies, related to feelings, values, and beliefs); the psychomotor domain (development of physical abilities and skills); and the behavioral domain (development of knowledgeable, acculturated, competent individuals) (Hauenstien, 1998, p. 2).

Item separation: indicates how well a sample of people is able to separate those items used in the test (Wright & Masters, 1982).

Logit: the log of the odds P/(1-P).

Macro-leadership: leadership of large organizations (Bass, 1998, p. 166).

Meta-leadership: leadership on the societal level (Bass, 1998, p. 166).

Micro-leadership: leadership of small groups and small organizations (Bass, 1998, p.166).

Macro-model of leadership: the essential competencies for leadership.

Order validity: the relation between item content and the empirical difficulty order of the items produced by the way persons respond to them, which either verifies, improves, or contradicts the intended definition and hence meaningfulness of the variables that the items are intended to implement (Wright & Masters, 1982).

Performance: producing as a matter of routine and accommodating new knowledge, skills, and values (Hauenstein, 1998).

Person Separation Index: indicates how well a sample of people is able to separate those items used in the test. The PSI is comparable to the KR20 measure of internal consistency (Wright & Masters, 1982).

Psychometrics: the psychological theory or technique of mental measurement.

Rasch measurement theory: mathematical models that specify unidimensionality and additivity. The Rasch measurement technique maximizes the fit between item responses and the probability of those responses given item and person calibrations (Wright & Stone, 1979).

Summary

Chapter 2 provides an overview of the growth of leadership, a preview of leadership in industry, a synopsis of critical theories of leadership, definitions of the macro-leadership competencies of the ALCP, and an introduction to Rasch measurement theory. Chapter 3 details the ethical standards of the study, the population parameters and sample characteristics, the development of the ALCP, the Rasch rating scale model, and the order probit model. Chapter 4 presents research findings for each of the research questions, and chapter 5 draws conclusions and recommendations from the research findings.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Leadership is one of the oldest preoccupations of great thinkers. The understanding of leadership has been and is strongly associated with people's quest for knowledge (Bass, 1990). Early written accounts of leadership can be found in the Old Testament. Exodus, the second book of the Old Testament, describes the accounts and actions of Moses as he led the oppressed Israelites out of Egypt, delivering them from bondage and providing God's law to the people. In 1 Samuel and 2 Samuel, the establishment of the early monarchy is narrated. Saul, the first king of Israel reigned for 22 years before the downfall of his kingdom (1 Sam. 13:1, New Revised Standard Version). It has been written that his egocentrism contributed to his rejection as a king. David was Saul's successor. "David reigned over all Israel, doing what was just and right for all his people" (2 Sam. 8:15, New Revised Standard Version). David then anointed Solomon as king. According to the scriptures, Solomon's greatest attribute was wisdom. As seen in 1 Kings 4:29, "God gave Solomon wisdom and very great insight, and a breadth of understanding as measureless as the sand on the seashore." Interestingly, Solomon's kingdom was torn down and given to one of his subordinates because he could not resist the temptation of his 300 concubines. In 1 Kings and 2 Kings, numerous stories are told illustrating the competencies and shortcomings of early leaders.

Other early accounts of leadership can be found in myths, legends, literary works, and philosophical thought. Classical examples are Homer's Odyssey and Iliad, Machiavelli's The Prince, and Hegel's Philosophy of the Mind. Furthermore, great thinkers such Asoka, Confucius, Plato, and Aristotle all taught precepts of leadership. To this point, the term leadership has been used without a tangible definition. In fact, much of the confusion about the study of leadership results from the lack of consensus regarding the definition of leadership. "There are almost as many different definitions of leadership as there are persons who have attempted to define the concept" (Bass, 1990, p.11). The differentiation among leadership, management, and other social influences has added to the ambiguity. It would be an oversight to consider the definitions and meanings of leadership without examining the kind of organization in which it is found. Bass and Stogdill, contemporary pioneers in the study of leadership, conducted a massive literature review and in nine pages categorized the various definitions of leadership found in the body of literature. Their findings categorize leadership as (a) a product of group process, (b) a function of personality characteristics or sets of behaviors, (c) the interaction between leader and follower, and (d) the exercise of power and influence (Bass, 1990). This study focused on macro-leadership competencies in industry.

Leadership and Industry

The American business culture endured isomorphic processes in the 1990s. These transformational processes were motivated by the technological explosion, competition in the market, and an urgent need to foster and develop global partnerships. In an attempt to adapt to the changing culture and gain a competitive advantage, as well as preparing for

the future, many American organizations embraced high-quality practices and human performance technologies as a means to stimulate isomorphism and adaptation. The American Society for Training and Development ([ASTD], 1998) noted the following:

> Organizations know that in order to keep growing their businesses in a highly competitive global marketplace, they need leaders who can stand up to the challenges encountered in decentralized business units, virtual offices, instantaneous transactions, and exacting customer service requirements, and continue to represent the best interests of the organization and its employees. (p. 1)

The 1999 Industry Training Report indicated that 81% of the organization survey provided specific types of leadership development training programs, which represented the second highest specialist training area. In order to adapt to the isomorphic fields of influence and change, organizations are self-referencing and evaluating societal needs, employee needs, and organizational needs. There is an increasing emphasis on cooperation (within a company, among companies, and international). This trend represents the continual need for people to understand each other and to collaborate and work together in a participative world. According to Gagne and Medsker (1996), "The need to understand each other is increased by the globalization of business interests and by the increasing ethnic, cultural, and gender diversity with each organization's workforce" (p. 5). Furthermore, the changing nature of work is changing the needs for all.

Seeking the desired course of action is fundamental to all organizations—that is, discerning a competitive strategy that facilitates organizational growth and development, quality services, and quality products that are above a competitive price is paramount to organizational survival. An integral component of any successful organization is its leadership team. Without it, organizations would not survive. "With companies increasingly turning to their people as a key source of competitive advantage, the development of leaders in organizations has taken on growing importance" (ASTD, 1998, p. 1).

Leadership Conceptions

Leadership is "more art than science" and has been described as mysterious, creative, charismatic, subjective, romantic, and change-oriented (Levey, 1992). Zaleznik (1977) believed that such expectation "contrasts sharply with the mundane, practical, and yet important conception that leadership is really managing work that other people do" (p. 69). Leadership requires using power to influence the thoughts and actions of other people. Hersey, Blanchard, and Johnson (1996) conceived leadership simply as influencing others towards organizational goals. Leadership is an adaptive process that is crafted to develop and guide people, organizations, and society.

Functions of Leadership

John Kotter (1990) believed that "leadership is about coping with change" (p.104). Senge (1994) explained that a leader "drives" change (p.74). The primary function of leadership is to navigate "chaos," to seek innovation, and to provide opportunity for growth, development, and prosperity. Navigation is an inductive process in which a leader studies, analyzes multiple perspectives looking for trends and relationships, and reflects on thought and action to discern coordinates (Bass, 1990; Kotter 1990; Senge,1996; Zaleznik, 1977). This process does not render plans, but creates visions, strategies, and alternatives. It is these visions, strategies, and alternatives that define the business and the culture in terms of future realities.

Management Conceptions

Management can be defined as objective, maintenance-oriented, and a routine process. Theodore Levitt (1976) stated:

> Management consists of the rational assessment of a situation and the systematic selection of goals and purposes (what is to be done); the systematic development of strategies to achieve these goals; the marshalling of the required resources; the rational design, organization, direction, and control of the activities required to attain the selected purpose; and finally, the motivating and rewarding of people to do work. (p.73)

Hersey et al. (1996) defined management as "the process of working with and through individuals and groups and other resources (such as equipment, capital, and technology) to accomplish organizational goals"(p.7).

Functions of Management

According to Kotter (1990), “Management is about coping with complexity" (p. 104). Managerial processes are about helping normal people who behave in normal ways repeatedly to complete routine jobs successfully. Managers should possess a skill set that encompasses good operation management skills, problem-solving skills, and an orientation to bottom-line issues (Levey, 1992; Zaleznik, 1977). The classical managerial functions have been thought to be planning, organizing, staffing, and controlling (Mintzberg, 1998).

Interdependence of Leadership and Management

Are leadership and management coterminous? Leadership is not inherently better than management, nor does it obtain more value so that it offers a replacement for it. Leadership and management are interdependent, having different functions and characteristics. Sound and effective managerial skills provide a foundation for effective leadership, yet Westfall (1994) differentiated the interdependence of leadership and management with a two-pronged dilemma paradigm. The first prong contains managerial issues, while the second contains leadership issues. The managerial prong is concerned with doing things right, whereas the leadership prong is concerned with doing the right thing. On the whole, “the role of the manager is to care for the body of the organization, while the role of the leader is to care for the spirit” (Westfall, 1994, p.5). Management and leadership are similar in nature in that they both attempt to perform three essential tasks: (a) identify significant needs, (b) form networks of people and relationships that can accomplish an agenda, and (c) attempt to ensure results and returns (Mintzberg, 1998;

Zaleznik, 1977). For the purposes of this study, a leader is defined as the person who is accountable for a unit, work group, and/or organization.

Critical Theories of Leadership

As stated previously "there are almost as many different definitions of leadership as there are persons who have attempted to define the concept" (Bass, 1990, p. 11). Associated with these definitions are numerous theories and models. No attempt was made here to review or summarize all leadership theories or models, because that is beyond the scope of this study. However, the reader can refer to Bass and Stogdill's Handbook of Leadership and review chapters 1 through 3. In the following section, several critical theories of leadership that have affected the development of the ALCP are reviewed.

Great Man Theory

The great man theory is based on the idea that the leader is born with innate leadership skills. The great man theory asserts that the leadership of great men has shaped history. (Despite the examples of Joan of Arc, Elizabeth I, and Catherine the Great, in the past, great women have been ignored in the study of leadership.) Examples of the great man theory include Moses, without whom the Jews would have remained in Egypt; Winston Churchill, who inspired the British in 1940; Ronald Reagan and Mikhail Gorbachev, who helped bring the cold war to an end. Essentially, the great man theory asserts that the mutations of society are due to great men who initiated movement and prevented others from leading society in other directions (Jennings, 1960). Thus the body of research focuses on characteristics of leaders and what motivated the trait theory. To a

large extent, this theory is still promulgated by illustrations of faltering business corporations that have been "turned around" by adaptive leaders, such as Lee Iacocca, Jack Welch, and Herb Kelleher.

Trait Theory

Trait theory assumes that leaders have been given superior qualities that make them "differentiable" from others (Bird, 1940). This body of research focuses on physical attributes, mental attitudes, and personality characteristics. In the 1940s many investigators focused on combinations of traits that seemed to define types, such as the "authoritarian personality." The pure trait theory fell into disfavor in the late 1940s when scholars concluded that both person and situation had to be included to explain the emergence of leadership.

Behavioral Theory

In many regards the behavioral school of thought continues to hold ground in society. Behaviorists emphasize what leaders actually do rather than their characteristics (Davis & Luthans, 1979; Sims, 1977). The behavioral theories are similar to the trait theories except that these theories involve the person's behavior and actions instead of underlying traits. The Michigan University studies done in the 1940s introduced this vein of research and were also concerned with identifying leadership behavioral patterns. With the use of high-performance and low-performance groups in differing organizations, researchers found two forms of leadership behaviors: (a) employee-centered and (b) production-centered. Employee-centered leaders were found to be more concerned with the welfare of their subordinates. On the contrary, production-centered leaders were more

concerned with results. Researchers concluded that the employee-centered leaders were found to have more productive work groups than the production-centered leaders. Ohio State University conducted similar leadership research studies. Researchers at Ohio State categorized leadership behavior into two groups: (a) consideration structure/behavior, and (b) initiating structure/behavior.

Situational Theory

Situational theory views leadership as specific to a situation rather than to a particular trait, personality, behavior, or some combination of these. It is based on the notion that different circumstances require different forms of leadership. Situational theorists argue that situational factors determine who will emerge as a leader. Essentially, situationalists assert that the emergence of a leader is a result of time, place, and circumstance (Hersey et al., 1996). Kenneth Blanchard and Paul Hersey are contemporary champions whose influential model has proposed a flexible leadership style in which the leader changes and/or adjusts their style, depending on the readiness level of the people they are attempting to influence. Leaders assess readiness by analyzing task and relationship behaviors to determine types of leadership. In short, the four styles of the Hersey et al. situational leadership model are the following: (a) directing (low support and high direction): provide specific instructions and closely supervise performance; (b) coaching (high support and high direction): explain decisions and provide opportunities for clarification; (c) supporting (high support and low direction): share ideas and facilitate in making decisions;(d) delegating (low support and low direction): turn over responsibility for decisions and implementation (pp.189-335).

Contingency Theory

Contingency theory developed from situational theory. Contingency theory attempts to select situational variables that best indicate the most appropriate leadership style to suit the circumstances. Fred Fiedler's (1967) contingency theory dominated during the 1970s. Fiedler was the first to specify how situational variables interact with leader personality and behavior. He posited two-way interaction between a measure of leader-task motivation versus relationship motivation and a measure of situational control. Situational control is defined as the degree to which the leader can control and influence the group process. Fiedler hypothesized that task-motivated leaders perform best in situations of high or low control, whereas relationship-motivated leaders perform best in moderate control situations.

Transformational Theory

Whereas transactional leadership models are based on the extrinsic motivation of an exchange relationship, transformational leadership is based on intrinsic motivation. As such, the emphasis is on commitment rather than compliance from the followers. The transformational leader is, therefore, a productive and innovative visionary. James Burns (1978) was one of the first to study and develop a definition of transformational leadership. Transformational leaders focus on "motivating followers by appealing to

higher ideals and moral values." Bass (1998) wrote that transformational leadership is basically composed of four dimensions, which called the "Four I's":

> Idealized Influence: Transformational leaders behave in ways that result in their being role models for their follower. The leaders are admired, respected, and trusted. Followers identify with the leaders and want to emulate them; leaders are endowed by their followers as having extraordinary capabilities, persistence, and determination.
>
> Inspirational Motivation: Transformational leaders behave in ways that motivate and inspire those around them by providing meaning and challenge to their followers' work. Team spirit is aroused. Enthusiasm and optimism are displayed.
>
> Intellectual Stimulation: Transformation leaders stimulate their followers' efforts to be innovative and creative by questioning assumptions, reframing problems, and approaching old situation in new new ways. Creativity is encouraged.
>
> Individualized Consideration: Transformational leaders pay special attention to each individual follower's needs for achievement and growth by acting as coach or mentor. Followers and colleagues are developed to successively higher levels of potential. Individualized consideration is practiced when new learning opportunities are created along with a supportive climate. (pp.5-6)

Servant-Leadership Theory

Robert Greenleaf wrote a series of essays in the 1970s regarding servant-leadership. His thoughts, opinions, and conceptions of leadership are finding popularity in the leadership/management realm today. Servant-leadership is a practical philosophy

that supports people who choose to serve first and then lead as a way of expanding service to individuals and institutions. Servant-leaders may or may not hold formal leadership positions. Servant-leadership encourages collaboration, trust, foresight, listening, and the ethical use of power and empowerment. It begins with the natural feeling that one wants to serve first, and then conscious choice causes aspirations to lead. Servant-leadership differentiates itself in the care taken by the servant first to serve and ensure that other people's needs are being met (Greenleaf, 1996).

New Science Theory

The new sciences are radically altering our understanding of the universe--revolutionary discoveries in quantum physics, chaos theory, and evolutionary biology are overturning the models of science that have dominated for centuries. Wheatley (1999) suggested that the new sciences provide equally powerful insights for changing the ways of designing, leading, managing, and viewing organizations. The core questions of the new sciences include the following:

1. How do systems move from order to chaos and from chaos to order?
2. How is order different from control?
3. How can we create more participative, open, and adaptive organizations?
4. How can we reconcile individual autonomy and organizational control?
5. What are the keys to organizational learning and communication?
6. What leads to organizational growth and self-renewal instead of decline and death?

Individuals need to stop seeking after the universe of the 17th century and begin to explore what became known in the 20th century (Wheatley, 1999). Table 1 is a summary from Zohar's (1997) Rewiring the Corporate Brain: Using the New Science to Rethink How We Structure and Lead Organizations, which organizes the essential concepts of new sciences management as compared to Newtonian management (p. 87).

Table 1

New Science Management Leadership

Newtonian management stresses	Quantum management stresses
Certainty	Uncertainty
Predictability	Rapid change; unpredictability
Hierarchy	Nonhierarchical networks
Division of labor or function fragmentation	Multifunctional and holistic integrated effort
Power emanates from top or center	Power emanates from many interacting centers
Employees are passive units of production	Employees are co-creative partners
Single viewpoint; one best way	Many viewpoints; many ways of getting thing done
Competition	Cooperation
Inflexible structures; heavy on bureaucratic control	Responsive and flexible structures; hands-off supervision
Efficiency	Meaningful service and relationships
Top-down (reactive) operation	Bottom-up (experimental) operation

Macro-Leadership Competencies of the ALCP

The ALCP measures the frequency and intensity of 11 macro-leadership competencies: (a) influencing and motivating, (b) learning, (c) managing, (d) envisioning, (e) teaming, (f) initiating, (g) ethical behavior, (h) developing human capital, (i) communicating, (j) decision making, and (k) changing. Adaptive leadership can be

taught and learned. The Adaptive Leadership Competency Profile is a 360-degree performance-assessment tool that measures macro-leadership behaviors that are congruent with the 21st-century business culture. Many of the published leadership inventories are based on traditional predictors of transactional leadership (Bass, 1990), whereas the ALCP is eclectic and rooted to situational leadership, servant-leadership, contingency theory, transformational leadership, new science theory, and 600 interviews with organizational employees that defined effective leaders and leadership. Academic and corporate training programs should refocus and teach adaptive skills and attitudes in order to break the transactional mentality.

Influencing and Motivating

Adaptive leaders influence and motivate by satisfying basic human needs, providing intellectual stimulation, and offering individualized consideration (Bass, 1998; Kotter, 1990). The influencing and motivating competency is imperative for generating highly energized behavior, which is critical for coping with change and cultivating individual growth, organizational development, and economic performance (Kotter, 1990).

Learning

Adaptive leaders are life-long learners. They foster learning environments in which they value self-mastery and self-knowledge (Senge, 1994). Adaptive leaders actively encourage subordinates and teams to innovate and to seek new ways of thinking. Adaptive leaders know that solutions reside not in the executive suite but in the collective intelligence of employees (Hevesi, 1996).

Managing

Adaptive leaders manage "organizations 'horizontally'—that is, they insist that "vertical" obfuscating be replaced with proactive (no checking 'up'), 'horizontal,' front-line cooperation in pursuit of fast action" (Peters, 1987, p. 458). They define performance outcomes, set goals, organize work effectively, and use resources appropriately. Sound and effective managerial skills provide a firm foundation for effective leadership. Leadership is a growing part of managerial work (Kotter, 1990; Mintzberg, 1998).

Envisioning

> According to Levey (1992), adaptive leaders are
>
> imbued with vision, a force of imagination that projects well beyond the present environment . . . vision is not the power of the unschooled and sedentary mind, but of one that has spent time reading, observing, and gathering information, and that is able, as a consequence, to marshal a depth of learning in the synthesis of new ideas. (p.6)

Adaptive leaders seek to create a sense of purpose that binds people together and propels them to fulfill their deepest aspirations to achieve (Senge, 1994).

Teaming

Adaptive leaders "empower their followers by developing them into high-involvement teams focused on quality and cost-effectiveness as well as quantity of output of production and service" (Bass, 1998, p.163). Collaboration is essential to the health of an organization, and adaptive leadership creates organizational structures that support teamwork, cooperation, and collaboration.

Initiating

Machiavelli (1515/1999) said that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success than to take the lead in the introduction of a new order of things. Adaptive leader possess high levels of initiating behavior, challenge the status quo, and encourage others to do the same. Adaptive leaders possess a positive attitude with an action-oriented demeanor.

Ethical Behavior

Adaptive leaders are ethical and deemed to be credible by shareholders, customers, and employees. Credibility is a multivariable composite of conviction, character, integrity, courage, composure, and competence (Bornstein & Smith, 1996). Ethical behavior is fundamental to adaptive leadership.

Developing Human Capital

Adaptive leaders understand and know that "workforce training must become a corporate (and indeed national) obsession" (Peters, 1987, p. 323). They know that individuals can develop only when they match their abilities to standards. If standards disappear, employees lose what they themselves want most—a sense of their own worth. Adaptive leaders invest in human capital as much as they invest in technological hardware (Peters, 1987).

Communicating

Adaptive leaders conduct open, direct, and truthful dialogue (Senge, 1994). They "initiate exploratory conversations as a means of examining assumptions, beliefs, and

what ifs" (Napolitano & Henderson, 1998, p. 248); they are willing to listen to suggestions and comments and make changes if the situation allows.

Decision-Making

Adaptive leaders know that competition relies on innovation and sound decision-making. According to Hevesi (1996), "Good decisions require facts and judgment. Quality of judgment depends on intuition, experience, and mental discipline" (p. 25). Adaptive leaders evaluate progress against benchmarks, define the root of the problem, consider alternatives and consequences, and then proceed with a course of action (Hevesi, 1996).

Changing

The time when managers were needed who could maintain the organization in a state of equilibrium has long passed. Organizations now have a great need for leaders who are change agents (Kotter, 1990; Senge, 1998). Adaptive leaders seek new ideas and approaches and regard change as a source of vitality and opportunity (Napolitano & Hendersen, 1998).

Rasch Measurement Theory

The Rasch model is a way to make sense of the world. It is a measurement method for obtaining fundamental, linear measures (qualified by standard errors and quality control fit statistics) from stochastic observations of ordered category responses (Wright & Masters, 1982). Georg Rasch, a Danish mathematician, formulated this approach in 1953 to analyze responses to a series of reading tests. "Rasch models are mathematical models that specify unidimensionality and additivity" (Lusardi & Smith, 1997, p. 38).

Unidimensionality is defined as one dimension; that is, all items measure a single construct. Additivity refers to the properties of the measurement units, which are the same size (i.e., interval) over the continuum. These measurement units are logits and are linear functions of the probability of responding to a category on a Likert scale for a person of given ability (Linacre & Wright, 1999; Lusardi & Smith, 1997).

Rasch models estimate item calibrations independently of the sample, and person measures independently of the items. Once the parameters are estimated, they are used to compute expected response patterns for each item. Fit statistics are derived from the comparison of the expected patterns and observed patterns of item responses by persons. These fit statistics are useful as a measure of the validity of the model-to-data fit and as a diagnostic analysis of individual responses (Lusardi & Smith, 1997; Wright & Stone, 1979).

Rasch Rating Scale Model

The Rasch rating scale model transforms ordinal rating measures into logit scales, thus creating mathematically linear measures, which are ideal for parametric statistical analysis (R.E. Schumacker, personal communication, June 20, 2000). The Rasch rating scale model was used to assess the psychometric properties of the 11 ALCP competency scales. The calibrated measures (i.e., logits) of the 11 ALCP scales were used in an ordered probit analysis to predict leader effectiveness.

The Rasch rating scale model is mathematically expressed as:

$$\pi_{nix} = \frac{\exp \sum_{j=0}^{x} \left[\beta_n - \left(\delta_i + \tau_j\right)\right]}{\sum_{k=0}^{m} \exp \sum_{j=0}^{k} \left[\beta_n - \left(\delta_i + \tau_j\right)\right]} \quad \chi = 0,1,\ldots,\mathrm{m} \tag{1}$$

$$\text{where } \tau \equiv 0 \text{ so that } \exp \sum_{\mathrm{j}=0}^{0} \left[\beta_{\mathrm{n}} - \left(\delta_i + \tau_j\right)\right] = 1$$

When this model is applied to the analysis of a rating scale, a position on the variable β_n is estimated for each person *n*, a scale value δ_i is estimated for each item i, and m response "thresholds" $\tau_1, \tau_{2,} \tau_3 \ldots \tau_m$ are estimates for the m+1 rating categories (Wright & Masters, 1982).

Validity and Reliability: The Rasch Perspective

Validity and reliability are ubiquitous terms in social science measurement. They are prominent in the American Psychological Association Standards ([APA],1985) and have earned chapters in measurement texts and entire courses in many academic programs. The qualitative aspects are conceptual, and the quantitative aspects are numerical. The concept of a variable is fundamental to validity. A variable is the unit of analysis of scientific inquiry and is intended to be a unidimensional manifestation of one clear idea. "It is the embodiment of an intention that is defined by the items written to implement the idea" (Wright & Stone, 1980a, p. 1). Items are used to collect data from which the coherence and utility of the idea (i.e., variable) and items are determined. According to the APA (1985),"Validity is the most important consideration in test evaluation" (p. 9). Validity deals with making and evaluating inferences drawn from test

scores. No test is valid or invalid in itself; only its use in some application merits a designation of validity (Allen & Yen, 1979; Pedhazur & Pedhazur -Schmelkin, 1991). The classical reliability model views a test score as having two additive components, the "true" score and a "random" error $(X = T + E)$. The error is defined as unrelated to the true score and unrelated to the error that would occur in another measurement of the same attribute. The true score is defined as "the average score taken over repeated independent testing with the same test—[it] is a theoretical idea" (Allen & Yen, 1979, p. 60). The traditional calculation of test reliability can be derived from the true score model. Test reliability is defined as the proportion of a sample's observed score variance SD^2, which is due to the sample's true score variance ST^2:

$$R = ST^2/SD^2 = 1 - \left(SE^2/SD^2\right) \quad (2)$$

where the observed variance is portioned into two components

$SD^2 = ST^2 + SE^2$, and SE^2 is the error variance of the test, averaged over that sample (Wright & Masters, 1982, p.112). The Rasch reliability method provides a direct estimate of test error variance SE^2. According to Wright and Masters (1982), "This modeled error tells us how precisely we will be able to estimate each person's ability when the items are internally consistent" (p. 113).

Validity. The conceptual framework of a variable is its qualitative validity. "Qualitative validity refers to the abstract idea of a variable and its content and illustrations that transform the abstraction from an idea to manifestation by items" (Wright & Stone, 1980e, p. 1). The qualitative aspects of a variable are its "content" and

"construct" validity. These two forms express the meaning of the variable. Two types of validity can be evaluated from the data: the ordering of items and persons and the fit of items and persons. These two types of validity can be defined as follows (Wright & Stone, 1980e):

> Type 1: Order Validity
>
> 1.1 "Meaning" validity from the calibration order of items. Item order validity operationalizes content and construct validity.
>
> 1.2 "Utility" validity from the measured order of person characteristics. This corresponds to the criterion validity in the APA (1985).
>
> Type 2: Fit Validity
>
> 2.1 "Response" validity determined from the discrepancy between particular response and its expectation.
>
> 2.2 "Item Function" validity determined by an analysis of the validities of responses to that item, i.e., item fit.
>
> 2.3 "Person Performance" validity determined by an analysis of the validities of the responses of that person, i.e., person fit. (p. 5)

Reliability. Standard errors associated with each item calibration and person ability estimate provide evidence for reliability. Rasch measurement renders a measure of people's ability on a linear scale, which is calculated from logistic transformation of their raw score. These linear estimates of ability are numerically suitable for calculating sample variances (Wright & Stone, 1980c). Rasch measurement models also calculate a standard error of measurement for each person measured.

> These individual errors can be squared and summed to produce a correct average error variance for the sample. When these results are substituted for those in the traditional KR20 formula, the result is a new formula which while equivalent in interpretation, gives a better estimate of reliability than KR20, coefficient alpha, or any other reliability based on non-linear scores. (Wright & Stone, 1980c, p. 5)

These errors can be used to construct confidence intervals with item difficulty and/or person's ability. Furthermore, the standard errors are used to determine strata, regions of the scale whose centers are separated by logit distances greater than can be accounted for by measurement error. Mathematically, strata are the quotient of four times the separation index plus one (4G+1) divided by three. It has been suggested that a scale must reach out to at least two item difficulty strata to be useful for scale definition (Wright & Masters, 1982;Wright & Stone, 1979).

Integrity and utility. Integrity means the sine qua non of the variable, the demonstration through construction of the variable intended, illustrated by items (qualitative validity) and supported by calculations (quantitative validity) (Wright & Stone, 1980a). Utility means application of the variable to whatever circumstances appear useful for investigating relationships between this variable and others. For example, the measures of the ALCP should discriminate between the leadership behaviors.

Discussions about utility arise from applications of the variable to any number of circumstances. There is no limit to the number of questions and answers that might be raised by applying the variable to different situations. There is no end to the investigation of utility; every conceivable application provides an answer to utility. Unless one

application remains the main consideration, there is no way that utility can be interpreted as an essence of validity (Wright & Stone, 1980a). Consequently, utility is not inherent to the integrity of the variable. In some applications, the variable may have only one use. In such a narrowly defined circumstance, utility could be considered as relevant to the validity of the variable. The difficulty with this approach, however, is that inevitably the criterion changes (Wright & Stone, 1980a).

> In short, the Rasch model and associated fit statistics can be used to identify items that define a single linear dimension; items that indicate from less to more of a variable. The development of a scale proceeds with a definition of the variable and construct' undimensionality. The Rasch measurement technique maximizes the fit between item responses and the probability of those responses given item and person calibrations. One defines the scale in terms of the items that define it. (Green, 1996, p.51)

CHAPTER 3

METHODS AND PROCEDURES

This chapter describes the methodology used to assess the psychometric properties of the 11 competency scales of the ALCP. Subject matter experts validated 11 competencies and 65 items. The Rasch rating scale measurement model was used to investigate fit (i.e., validity) and separation (i.e., reliability) of the items on the 11 ALCP scales. An ordered probit model was used to predict the level of leader effectiveness.

Participants

Ethical Standards

Participation in this study was voluntary, and subjects were not exposed to any unreasonable discomforts, risks, or violations of their human rights. Approval to conduct this study was obtained from the Institutional Review Board at the University of North Texas (see Appendix A). By requirement of the review board, the participating organization signed a letter of Informed Consent (see Appendix B).

Sample

Organizations were recruited through the newspaper, electronic business journals, and the American Society of Training and Development. A short recruitment presentation describing the purpose, requirements, feedback reports, and implementation timeline was made to the participating organizations.

Initially, 17 organizations were interested in participating. On follow-up, 3 organizations committed; however, 2 of the organizations did not have the technological infrastructure to participate. Therefore, a sample of 15 organizational leaders was drawn for study at a public utilities company. Data were collected on 7 leaders from 32 subordinates and 9 peers.

Table 2

Sample Characteristics

Organization	Type of industry	Leaders (n)	Subordinates (n)	Peers (n)
Organization A	Public utilities	7	32	9

Subordinate and peer data were used to assess evidence of unidimensionality and internal consistency for 11 scales of the ALCP.

Instrument Development

Competency and Item Development

Competency assessment methods advocated by Spencer et al. (1990) were used to analyze the NSF qualitative database (i.e., employee interviews) for "effective" leadership behaviors / competencies. As a result, 13 leadership competencies were identified (communicating, thinking, teaming, envisioning, developing human capital, ethical behavior, learning, benchmarking, changing, initiating, influencing/motivating, decision-making/problem solving, managing) and 130 scale items. In order to provide evidence for the qualitative dimension of validity (content and construct), seven subject matter

experts (five Ph.D.s, one Ed.D., and one M.S.) were provided, with the 130 items printed on 3”x 5” index cards and thirteen 7”x10,” envelopes, which were titled by competency. Experts were asked to read each item carefully and then to place the item in one of 13 labeled envelopes (envisioning, developing, teaming, etc). The experts were asked to write comments, concerns, suggestions, and/or questions on the ruled side of the index cards. The items were sorted, and envelopes were returned to the researcher. Data produced by each expert were inputted into a SPSS 10.0 data file, and frequencies were calculated. Items that met the standardized test development criteria of 70%, meaning that five out of the seven experts had to agree on item placement (Haladyna, 1994), were deemed validated and used in the initial ALCP psychometric analysis. Subject matter experts validated 11 competencies: (a) envisioning, (b) initiating, (c) influencing and motivating, (d) teaming, (e) managing, (f) learning, (g) ethical behavior, (h) developing human capital, (i) communicating, (j) decision-making, and (k) changing and 65 items. Items were converted into an electronic questionnaire and were delivered via the Internet (see Appendix C).

Competency Scales

The ALCP scales (Figure 2) measure the frequency and intensity of 11 macro-leadership competencies. Scale 1 contains six items and measures an influencing and motivating competency. Scale 2 has five items and measures a learning competency. Scale 3 contains eight items that measure a managing competency. Scale 4 has five items that measure an envisioning competency. Scale 5 contains seven items and measures a teaming competency. Scale 6 has three items that measure an initiating competency. Scale

7 is an ethics competency, which contains six items. Scale 8 has six items that measure a developing of human capital competency. Scale 9 has five items that measure a communication competency. Scale 10 has seven items that measure a decision-making competency. Lastly, scale 11 has seven items that measure a changing competency.

Adaptive Leadership Competency Profile Scales

Scale	Number of Items
1. Influencing and Motivating	6
2. Learning	5
3. Managing	8
4. Envisioning	5
5. Teaming	7
6. Initiating	3
7. Ethical Behavior	6
8. Developing Human Capital	6
9. Communicating	5
10. Decision making	7
11. Changing	7
Total	65

Figure 2. ALCP competency scales.

Item Measures

The ALCP measures the frequency and intensity of the 11macro-leadership competencies and leader effectiveness. Frequency is a measure of how often the behavior is used, and intensity is a measure of degree, magnitude, or highly focused operating style. The "Frequency" measure is a 5-point multinomial scale where: 0= NEVER performs this task, 1= Performs this task YEARLY, 2= Performs this task MONTHLY, 3= Performs this task WEEKLY, and 4= Performs this task DAILY. Similarly, the "Intensity" measure is a 5-point multinomial scale where: 0=NOT Intense, 1=SOMEWHAT Intense, 2=MODERATELY Intense, 3=HIGHLY Intense, and 4=EXTREMELY Intense. The effectiveness measures include a dichotomous and multinomial scale where: 0=No, and 1=Yes, 0= NOT Effective, 1= SOMEWHAT Effective, 2= MODERATELY Effective, 3= HIGHLY Effective, and 4= EXTREMELY Effective.

Design

Validity

When intentions are supported by data, construct validation is achieved (Wright & Stone, 1980e). Discrepancies teach us something about the construct. Rasch measurement yields the misfit statistics so that it can be determined which items demonstrate quantitative validity and also where they appear in the hierarchy of qualitative validity. Fit statistics are diagnostic of validity; they guide the measurement process by detecting lack of fit and too good of fit. Lack of fit identifies discrepancies

between intention and the results. Too good of fit identifies circumstances too good to be true and, hence, suspicious. Both need further investigation. The confrontation of qualitative and quantitative validity provides opportunities to achieve a construct that is both meaningful and in which a valid inference can be made from the scores.

Fit Statistics

The purpose of fit statistics is to aid in the measurement of quality control, to identify those parts of the data that meet Rasch model specifications and those parts that do not (Wright & Masters, 1982). Parts that do not are not automatically rejected, but are examined to identify in what way and why they fall short, and whether, on balance, they contribute to or corrupt measurement. Then a decision can be made to accept, reject, or modify the data.

Item Fit Statistics

WINSTEPS, a Rasch model computer program, which was created by John M. Linacre, provides two types of fit statistics for persons and items: (a) infit and (b) outfit (Linacre & Wright, 1999). WINSTEPS was used to perform the psychometric analysis of the 11 ALCP scales.

Infit statistics are information-weighted fit statistics, which are more sensitive to unexpected behavior affecting responses to items near the person's ability level. MNSQ is the mean-square infit statistic with the expectation 1. Values substantially below 1 indicate dependency in data, whereas values substantially above 1 indicate noise (Wright & Masters, 1982). The weighted mean square is calculated as:

$$v_i = \frac{\sum_{n}^{N} W_{ni} Z_{ni}^2}{\sum_{n}^{N} W_{ni}}. \quad (3)$$

ZSTD is the infit mean-square fit statistic standardized to approximate a theoretical mean 0 and variance of 1. The weighted mean square, v_i, is used to calculate a ZSTD as:

$$ZSTD = \left(v_i^{1/3} - 1 \right) \left(\frac{3}{q_i} \right) + \left(\frac{q_i}{3} \right) \quad (4)$$

where q_i is the standard deviation of the weighted mean square.

Outfit statistics are outlier-sensitive fit statistics that are sensitive to aberrant behavior on items far from a person's ability level. MNSQ is the mean-square outfit statistic, with expectation 1. Values substantially less than 1 indicate dependency in the data, whereas values substantially greater than 1 indicate the presence of unexpected outliers (Wright & Masters, 1982). ZSTD is the outfit mean-square fit statistic standardized to approximate a theoretical mean of zero and a standard deviation of one. Values less than zero suggest a lack of variability, and values greater than zero are likely to be indicative of excessive variability (Linacre & Wright, 1999; Lusardi & Smith,1997). A reasonable range for both fit statistics is –2 to 2. Items or persons with associated fit statistics outside this range should be evaluated in order to discern the possible cause of misfit. Item fit statistics play a fundamental role in the construction and calibration of an instrument.

Person Fit Statistics

Person infit is calculated as:

$$v_n = \sum_{i=1}^{L} W_{ni} Z_{ni}^2 \Big/ \sum_{i=1}^{L} W_{ni} = \sum_{i=l}^{L} y_{ni}^2 \Big/ \sum_{i=1}^{L} W_{ni} \qquad (5)$$

with expectation 1 and variance q^2 calculated as:

$$q_n^2 = \sum_{i}^{L} \left(C_{ni} - W_{ni}^2\right) \Big/ \left(\sum_{i}^{L} W_{ni} \right)^2 . \qquad (6)$$

ZSTD is the infit mean-square fit statistic standardized to approximate a theoretical mean 0 and variance of 1.

$$ZSTD_n = \left(v_n^{1/3} - 1 \right) \left(\frac{3}{q_n} \right) + \left(\frac{q_n}{3} \right) \qquad (7)$$

with an expectation near zero and variance near 1 when the model holds. The fit statistics parallel the corresponding item fit statistics exactly. The only difference is that squared residuals are summed over items for a person rather than over persons for an item. Person fit statistics are useful for assessing the validity of measures made with instruments that have already been established. It should be noted that the fit statistics generated and reported by WINSTEPS will not exactly match those printed in Wright and Masters's (1982) Rating Scale Analysis or listed above. "This is because the reported values of these statistics are the results of a continuing process of development in statistical theory and practice" (Linacre & Wright, 1999, p.76).

Reliability

According to Wright and Masters (1982), "Before we can measure anything, we must mark out the variable along which measures are to be made" (p. 91). The 11

leadership competencies of the ALCP are defined in terms of the items. "These items must be sufficiently well separated in difficulty to identify the direction and meaning of the variable" (Wright & Masters, 1982, p. 91). How successful one is in defining a line of increasing intensity depends on the extent to which items are separated. The statistics used to calculate item separation can be found in Wright and Masters's Rating Scale Analysis.

Item Separation Statistics

The statistics used to describe the separation of items can be found in Wright and Masters (1982, pp. 91-92). Let the observed variance among item calibrations be SD_I^2. Because of the fact that each calibration d_i contains error s_i, we can improve our estimate of the item variance by adjusting for this calibration error.

$$SA_i^2 = SD_i^2 - MSE_I \tag{8}$$

where MSE_I, the "mean square calibration error," is the mean of the item calibration error variances

$$MSE_I = \sum_{i=1}^{L} s_i^2 \Big/ L . \tag{9}$$

If the extent to which items fail to work together to define a single variable is described by an overall test-to-sample fit mean square V, and if V exceeds 1, then the test variance could be futher adjusted for item inconsistency by

$$SA_I^2 = SD_I^2 - V(MSE_I) . \tag{10}$$

However, as V exceeds 1, the existence of a variable on which to estimate a variance becomes increasingly clouded.

There are three ways in which the adjusted item standard deviation SA_I can be used to describe the extent to which items are separated in difficulty. First, if we use the root mean square to obtain

$$SE_I = \left(MSE_I\right)^{1/2} \tag{11}$$

then calculate an item separation index, which gives the item deviation in calibration error units,

$$G_I = SA_I / SE_I \ . \tag{12}$$

Secondly, if statistically distinct levels of item difficulty can be defined as difficulty strata with centers three calibration errors apart, then this separation index G_I can be translated into the number of item strata defined by the test

$$H_I = \left(4G_I + 1\right)/3 . \tag{13}$$

Finally, the proportion of observed item variance that is not due to estimation error can be used as the reliability with which this sample separates these items

$$\text{ISR} = 1 = \left[\frac{MSE_I}{SD_I^2}\right] = G_I^2 / \left(1 + G_I^2\right). \tag{14}$$

Item separation reliability (ISR) provides an indication of how well items are separated by the persons taking the test. This is important in creating a linear measure from less to more for each of the 11 ALCP competency scales.

Person Separation Statistics

The statistics used to describe the separation of persons on a variable parallel the item separation statistics and can be found in Wright and Masters (1982, pp.105-106). The observed variance among persons SD_P^2, which can be adjusted for the measurement error s_n associated with each measure b_n

$$SA_P^2 = SD_P^2 - MSE_P \tag{15}$$

where MSE_p the "mean square measurement error," is the mean of the person measurement error variances.

$$MSE_P = \sum_{n=1}^{N} s_n^2 \Big/ N \, . \tag{16}$$

There are three ways in which the adjusted sample standard deviation SA_P can be used to describe the extent to which persons are separated on the variable. First, the root mean square is used to obtain an average measurement error

$$SE_P = \left(MSE_P\right)^{1/2} \tag{17}$$

then we calculate a person separation index that gives the sample standard deviation in standard error units

$$G_P = SA_P / SE_P \, . \tag{18}$$

Secondly, if we can statistically define distinct levels of person ability as ability strata, then this separation index can be translated into the number of statistically distinct person strata identified by the test

$$H_P = \left(4G_p + 1\right)/3 . \tag{19}$$

Finally, the proportion of observed sample variance that is not due to measurement error is the reliability with which this test separates persons. Person separation reliability (PSR) is calculated by subtracting the ratio of the sample mean square person measure error (MSEp) to the sample person measure variance (SDp^2) from 1.

$$R_p = \frac{SA_P^2}{SD_P^2} = 1 - \left[\frac{\mathrm{MSE_P}}{\mathrm{SDp}^2}\right] = G_P^2/\left(1+G_P^2\right). \quad (20)$$

This is important in crating a scale score for each of the 11 ALCP scales that differentiates persons who have less or more of the leadership competency.

Analysis

> There are many settings in which the phenomenon we seek to model is discrete rather than continuous. Consider, for example, modeling labor force participation, the decision of whether or not to a make a purchase, or the decision of which candidate to vote for in an election. For the first of these, intuition would suggest that factors such as age, education, marital status, number of children, and some economic data would be relevant in explaining whether an individual chooses to seek work or not in a given period. But something is obviously lacking if this is treated as the same sort of regression model we used to analyze consumption or the cost of productivity. (Greene, 1997, p. 871).

Qualitative response models are models in which the dependent variable is a discrete outcome; for example, “yes or no” response. Thus, conventional regression models are inappropriate (Greene, 1997). The dependent variable in this study was a

multinomial order response of leadership effectiveness where: 0= NOT Effective, 1= SOMEWHAT Effective, 2= MODERATELY Effective, 3= HIGHLY Effective, and 4= EXTREMELY Effective.

Ordered Probit Model

The ordered probit model is a qualitative response model in which the dependent variable, Y, exhibits multiple realizations of an ordered choice.

$$\tilde{Y}_i = B_1 + B_2 X_{2i} + B_{3i} + \cdots + B_{Ki} + X_{Ki} + \varepsilon_i .$$

where $\tilde{Y}_i$ can take on "P" different values.

$$\tilde{Y}_i = \beta_1 + \sum_{j=1}^{k} \beta_j X_{ji} + \varepsilon_i \qquad (20)$$

Assumptions

The assumptions of the probit model are:

1. The dependent variable $\tilde{Y}_i$, is a continuous but unobservable index of ability.

2. There exists a multivariate realization on the dependent, called "Y_i," which is observable based on the value of $\tilde{Y}_i$ as follows:

$$Y_i = \begin{Bmatrix} 0 \text{ if } \tilde{Y}_i \le 0 \\ 1 \text{ if } 0 < \tilde{Y}_i \le \mu_i \\ 2 \text{ if } \mu_i < \tilde{Y}_i \le \mu_2 \\ \vdots \\ \text{"P" if } \tilde{Y}_i > \mu_{p-1} \end{Bmatrix}$$

3. The error term, ε_i, is normally distributed (Tieslau, 1999).

Goodness of Fit Measures

Likelihood ratio index. The likelihood ratio index is an indicator of goodness of fit in the ordered probit model (Greene, 1997, p. 891) and is calculated as:

$$LRI = \left[1 - \frac{\log likelihood_{UN}}{\log likelihood_{R}}\right]. \quad (20)$$

where: log likelihood $_{UN}$ = log of the likelihood function evaluated at the unrestricted estimate and log likelihood $_{R}$ = the log of the likelihood function evaluated at the restricted estimate (when all slope parameters are set equal to zero). The closer the LRI is to 1, the better the fit. A general rule of thumb is that an LRI>25% is a fairly good fit, and an LRI >50% is considered to be a very good fit (Tieslau, 1999).

Frequency of correct prediction (FCP). The FCP is another index for model evaluation. Correct predictions in a multivariate nonlinear probability model are where: Y is actually 0 and is predicted to be 0 ; Y is actually 1 and is predicted to be 1; Y is actually 2 and is predicted to be 2; and Y is actually P and is predicted to be P. FCP is calculated as:

$$\text{FCP for } 1 = \left[\frac{\text{number of times that Y is actually 1 and predicted to be 1}}{\text{total number of times that } Y = 1}\right]. \quad (21)$$

In general, a model is considered to have good predictability if the FCP index is 75% or better (Tieslau, 1999).

ALCP Model Specification

The competency scale measures of frequency and intensity were rescaled so that the lowest reportable person measure was 0 and the highest, 100. See the WINSTEPS manual for scaling procedures (Linacre & Wright, 1999, p. 91). The rescaled frequency and intensity measures were summed and divided by two. As a result, 11 behavioral competency measures were used as independent variables in a multinomial-ordered nonlinear probability model. The dependent variable was the ordered response for effectiveness. Hence, an ordered probit model was used to answer the following research questions: Does the ALCP predict leadership effectiveness as measured by the LRI and the FCP indices?

$$\tilde{Y}_i = B_1 + B_2 X_{2i} + B_3 X_{3i} + B_4 X_{4i} + \beta_5 X_{5i} + B_6 X_{6i} + B_7 X_{7i} + B_8 X_{8i} + B_9 X_{9i} + B_{10} X_{10i} + B_{11} X_{11i} + B_{12} X_{12i} + \varepsilon_i .$$

where:

X_{2i} = influencing & motivating behavioral competency measure of leader "i";
X_{3i} = learning behavioral competency measure of leader "i";
X_{4i} = managing behavioral competency measure of leader "i";
X_{5i} = envisioning behavioral competency measure of leader "i";
X_{6i} = teaming behavioral competency measure of leader "i";
X_{7i} = initiating behavioral competency measure of leader "i";
X_{8i} = ethics behavioral competency measure of leader "i";
X_{9i} = developing human capital behavioral competency measure of leader "i";
X_{10i} = communicating behavioral competency measure of leader "i";
X_{11i} = decision making behavioral competency measure of leader "i";
X_{12i} = changing behavioral competency measure of leader "i";

and: $Y_i = \left\{ \begin{array}{l} 0 \text{ if leader "i" is not effective} \\ 1 \text{ if leader "i" is somewhat effective} \\ 2 \text{ if leader "i" is moderately effective} \\ 3 \text{ if leader "i" is highly effective} \\ 4 \text{ if leader "i" is extremely effective} \end{array} \right\}$.

Data were collected from the engineering and training departments of a public utilities company in the southwestern United States. The Rasch rating scale measurement model and an ordered probit model were applied in an attempt to answer the research questions. Research findings are presented in chapter 4.

CHAPTER 4

FINDINGS

Sample Demographics

A stratified random sample of 50% of the leaders was drawn from a public utility company's engineering department. Data were collected from 32 subordinates, 9 peers, and 7 leaders, of which 10 were female and 38 male. Rater ethnicity was 96% Caucasian. Of the 48 total raters, 52 % indicated that they work within a traditional organization, whereas 48 % indicated that they work within a team-based organization. Leader responses were not included in the analysis. The Rasch rating scale model (Wright & Masters, 1982) was applied to the data on the 11 scales for the psychometric analyses of the Adaptive Leadership Competency Profile.

Research Question 1

1. How well do the respective items of the ALCP fit the Rasch rating scale measurement model for the 11 scales of the ACLP?

The item calibration in Table 3 for the frequency measure of the influencing and motivating scale ranged from -0.62 to 0.60. Item 1.5, "Acts as a catalyst and motivates others," had large negative standardized mean square (Zstd) statistics for both infit (-1.8) and outfit (-1.6) measures. Item 1.2, "Instills a unifying, challenging, and rewarding spirit," had large negative outfit Zstd (1.4) statistics.

The infit mean scores for the mean square (Mnsq) (.99) and standardized mean square (Zstd) (-.1) closely adhered to their expected values of 1 and 0; likewise, the outfit mean scores Mnsq (.94) and Zstd (-.1) were close to their expected values of 1 and 0.

The item calibration for the observed intensity of the influencing and motivating scale ranged from -0.46 to 0.41 (see Table 3). Item 1.3, "Influences others to help achieve work-related task and or objective," had large positive Zstds for both infit (1.3) and outfit (1.1) measures. Item 1.6, "Brings out the best in people," had large negative standardized mean squares for both infit (-1.1) and outfit (-1.2) measures. The infit mean scores Mnsq (.97) and Zstd (-.2) were close to their expected values of 1 and 0; the mean scores Mnsq (.94) and Zstd (-.3) were relatively close to their expected values of 1 and 0.

Table 3

Item Statistics for Frequency and Intensity Measures of Influencing and Motivating

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
Offer encouragement	.60	.30	1.17	.7	1.02	.1
Acts as a catalyst.	.33	.30	.63	-1.8*	.64	-1.6*
Infl. others to achieve	.05	.30	1.12	.5	1.02	.1
Instills a unifying	-.13	.31	.81	-.9	.71	-1.4*
Knows how to infl.	-.23	.31	1.08	.3	1.15	.6
Brings out best	-.62	.32	1.10	.4	1.10	.4

(table continues)

Item	Measure	Error	Infit	Outfit

			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
M	.00	.31	.99	-.1	.94	-.3
SD	.39	.01	.20	.9	.19	.9
Intensity measure						
Acts as a catalyst	.41	.35	.83	-.8	.80	-.9
Instills a unifying	.17	.35	1.10	.4	1.13	.5
Knows how to infl.	.17	.35	.89	-.5	.88	-.5
Infl. others to achieve	-.08	.35	1.33	1.3*	1.31	1.1*
Offer encouragement	-.21	.36	.92	-.4	.81	-.8
Brings out best	-.46	.36	.75	-1.1*	.70	-1.2*
M	.00	.35	.97	-.2	.94	-.3
SD	.28	.00	.19	.8	.21	.8

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As seen in Table 4, the range of item calibration for the observed frequency measure for the learning scale was from -0.74 to 0.83. Item 2.1, "Creates a learning environment," had large negative Zstds for both infit (-3.0) and outfit (-2.9) statistics. Item 2.4, "Fosters experimentation and learning," had large positive Zstds for both infit (1.9) and outfit (2.0) statistics. The infit mean scores, Mnsq (.97) and Zstd, (-.3), were

close to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (1.01) and Zstd (-.2), were close to their expected values of 1 and 0.

The range of item calibrations for the observed intensity measure for influencing and motivating scale was from -0.82 to 1.02 (see Table 4). Item 2.1, "Creates a learning environment," had large negative Zstds for both infit (-3.5) and outfit (-3.5) statistics. Item 2.4, "Fosters experimentation and learning," had large Mnsqs and Zstds statistics for both infit (1.6 and 2.3) and outfit (1.66 and 2.4). The infit mean scores for Mnsq (.98) and Zstd (-.4) closely adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (.98) and Zstd (-.4), were close to their expected values of 1 and 0.

Table 4

Item Statistics for Frequency and Intensity Measures of Learning

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
Promotes life long	.83	.27	1.03	.1	1.13	.6
Foster experimentation	.39	.27	1.48	1.9*	1.52	2.0*
Promotes innovation	-.20	.27	.90	-.5	.95	-.2
Creates learning env	-.28	.28	.46	-3.0*	.47	-2.9*
Turns situation into learn	-.74	.28	.97	-.1	.96	-.2
M	.00	.27	.97	-.3	1.01	-.2
SD	.55	.00	.33	1.6	.34	1.6

(table continues)

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
			Intensity measure			
Foster experimentation	1.02	.29	1.61	2.3*	1.66	2.4*
Promotes life long	.60	.29	1.15	.7	1.14	.6
Creates learning env	-.23	.29	.43	-3.5*	.42	-3.5*
Turns situation into learn	-.56	.29	1.05	.2	1.04	.2
Promotes innovation	-.82	.29	.67	-1.7*	.66	-1.7
M	.00	.29	.98	-.4	.98	-.4
SD	.70	.00	.41	2.0	.42	2.0

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As seen in Table 5, the range of item calibration for the observed frequency measure for the managing scale was from -0.65 to 0.81. Item 3.2, “Sets priorities with an appropriate sense of what is most important or urgent,” Item 3.3, “Manages operations and provides direction,” Item 3.4, “Sees that a job is completed,” Item 3.5, “Performs essential tasks in ambiguous situation,” Item 3.6, “Makes do in tough situations,” and Item 3.8, “Sets goals, organizes work effectively and uses resources appropriately,”all misfitted the Rasch measure model as indicated by large positive or negative fit statistics. The infit mean scores, Mnsq (.99) and Zstd (-.3), closely adhered to their expected values of 1 and 0; likewise, the mean scores, Mnsq (.95) and Zstd (-.4), were close to their expected values of 1 and 0.

Table 5

Item Statistics for Frequency Measure of Managing

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Defines performance	.81	.23	1.12	.5	1.10	.5
Make do	.48	.24	1.80	2.8*	1.67	2.5*
See that a job	.07	.25	.71	-1.4*	.76	-1.1*
Sets goals	.07	.25	.44	-3.1*	.51	-2.7*
Performs essential task	-.18	.25	1.41	1.6*	1.22	.9
Manages operations	-.24	.26	.74	-1.2*	.66	-1.7*
Uses time and resources	-.37	.26	1.06	.2	1.09	.4
Sets priorities	-.65	.27	.63	-1.8*	.55	-2.2*
M	.00	.25	.99	-.3	.95	-.4
SD	.44	.01	.42	1.8	.37	1.7

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

The range of item calibration for the observed intensity measure for scale was from -0.78 to .57 (see Table 6). Item 3.3, “Manages operations and provides direction,” had large negative Zstds for both infit (-2.0) and outfit (-2.2) statistics. Item 3.6, “Makes do in tough situations,” had large positive Mnsqs and Zstds for both infit (1.88 and 3.0)

and outfit (1.82 and 2.7) statistics. Item 3.8, “Sets goals, organizes work effectively, and uses resources appropriately,” had large negative Zstds for both infit (-2.3) and outfit (-2.3). The mean scores for the infit Mnsq (1.00) and Zstd (-.2) closely adhered to their expected values of 1 and 0; likewise, the mean scores for the outfit Mnsq (.98) and Zstd (-.4) were close to their expected values of 1 and 0.

Table 6

Item Statistics for Intensity Measure of Managing

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Defines performance	.57	.25	.93	-.3	.91	-.4
Manages operations	.51	.25	.62	-2.0*	.60	-2.2*
Uses time and resources	.45	.25	1.00	.0	1.00	.0
See that a job	.19	.26	1.00	.0	1.03	.2
Sets goals	.12	.26	.57	-2.3*	.56	-2.3*
Make do	-.56	.27	1.88	3.0*	1.82	2.7*
Sets priorities	-.49	.27	1.15	.6	1.03	.1
Performs essential task	-.78	.27	.84	-.7	.81	-.8

(table continues)

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
M	.00	.26	1.00	-.2	.97	-.3
SD	.50	.01	.38	1.5	.37	1.5

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As shown in Table 7, the range of item calibration for the observed frequency measure for the envisioning scale was from -2.10 to 1.20. Item 4.1, "Imagines future events," had large negative Zstds for both infit (-2.5) and outfit (-2.6) statistics. Item 4.4, "Creates strategic visions," had large negative Zstds for both infit (-1.8) and outfit (-1.7) statistics. Item 4.5, "Sees the Big Picture," had large Mnsqs and Zstds for both infit (1.92 and 3.4) and outfit (1.96 and 3.0). The infit mean scores, Mnsq (.95) and Zstd (-.5), closely adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (.95) and Zstd (-.5), were close to their expected values of 1 and 0.

The range of item calibration for the observed intensity for the envisioning scale was from -1.39 to 0.72 (see Table 7). Item 4.1, "Imagines future events," had large negative Zstds for infit (-2.1) and outfit (-1.8) statistics. The infit mean scores for Mnsq (.97) and Zstd (-.2) closely adhered to their expected values of 1 and 0; however, the outfit mean scores, Mnsq (.82) and Zstd (-.6), were not as close to their expected values of 1 and 0.

Table 7

Item Statistics for Frequency and Intensity Measures of Envisioning

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
Creates strategic	1.20	.34	.66	-1.8*	.65	-1.7*
Defines a vision	.85	.34	.86	-.6	.87	-.6
Sees the light	.15	.34	.79	-1.0	.83	-.7
Imagines future events	-.09	.35	.52	-2.5*	.45	-2.6*
Sees the big picture	-2.10	.34	1.92	3.4*	1.96	3.0*
M	.00	.34	.95	-.5	.95	-.5
SD	1.15	.00	.50	2.0	.52	1.9
Intensity measure						
Creates strategic	.72	.36	.95	-.2	.74	-.8
Defines a vision	.58	.37	.92	-.4	.70	-.9
Imagines future events	.04	.37	.58	-2.1*	.44	-1.8*
Sees the light	.04	.37	1.20	.8	.96	-.1
Sees the big picture	-1.39	.39	1.19	.7	1.28	.7
M	.00	.37	.97	-.2	.82	-.6
SD	.75	.01	.22	1.0	.28	.9

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As shown in Table 8, the range of item calibration for the observed frequency measure for the teaming scale was from -1.05 to 0.68 . Item 5.2, "Provides support to the team in order to accomplish goals," had large negative Zstds for both infit (-2.2) and outfit (-2.4) statistics. Item 5.7, "Works and plays well with others," had large positive Mnsqs for both infit (2.04) and outfit (1.48) statistics. The infit mean scores, Mnsq (1.03) and Zstd (-.1), were close to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (.94) and Zstd (-.4), were relatively close to their expected values.

Table 8

Item Statistics for Frequency Measure of Teaming

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Foster esprit de corps	.68	.26	-.87	-.6	.80	-.9
Guides to reach consen.	.61	.26	.93	-.3	1.17	.7
Generates participation	.26	.27	.90	-.4	1.04	.2
Fosters copartnering	.19	.27	.75	-1.1*	.62	-1.8*
Foster teamwork	-.35	.29	1.19	.7	1.0	.0
Provides support	-.35	.29	.53	-2.2*	.47	-2.4*
Works and plays well	-1.05	.31	2.04	3.2*	1.48	1.2*
M	.00	.28	1.03	-.1	.94	-.4
SD	.57	.02	.45	1.6	.32	1.2

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As seen in Table 9, the range of item calibrations for the observed intensity for the teaming scale was from -0.83 to 0.57. Item 5.2, "Provides support to the team in order to accomplish goals," had large negative Zstds for both infit (-1.4) and outfit (-1.4) statistics. Item 5.7, "Works and plays well with others," had large positive Mnsqs for both infit (1.6) and outfit (1.1) statistics. The infit mean scores, Mnsq (.98) and Zstd (-.1), closely adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (.96) and Zstd (-.2), were close to their expected values of 1 and 0.

Table 9

Item Statistics for Intensity Measure of Teaming

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Guides to reach consen	.57	.30	.79	-1.0	.91	-.4
Foster teamwork	.20	.30	.97	-.1	.89	-.5
Generates participation	.20	.30	.99	.0	.98	-.1
Fosters copartnering	.20	.30	1.00	.0	.98	-.1
Foster esprit de corps	.20	.30	1.01	.1	.99	.0
Provides support	-.55	.31	.72	-1.4*	.70	-1.4*
Works and plays well	-.83	.31	1.39	1.6*	1.27	1.1*
M	.00	.30	.98	-.1	.96	-.2
SD	.46	.00	.20	.9	.16	.7

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As shown in Table 10, the range of item calibrations for the observed frequency measure for the initiating scale was from -1.97 to 1.25 . Item 6.2, “Takes action and seizes opportunities,” had large negative Zstds for both infit (-1.1) and outfit (-1.3) statistics. Item 6.3, “Approaches new challenges with a can do attitude,” had large positive Mnsq (2.08) and Zstd (2.08) for outfit statistics. The infit mean scores, Mnsq (.91) and Zstd (-.4), were close to their expected values of 1 and 0; the outfit mean scores, Mnsq (1.18) and Zstd (.2), were relatively close to their expected values of 1 and 0.

The range of item calibration for the observed intensity measure for initiating scale was from -3.77 to 1.95 (see Table 10). Item 6.2, “Takes action and seizes opportunities,” had large negative Zstds for both infit (-2.5) and outfit (-2.3) statistics. Item 6.3, “Approaches new challenges with a can do attitude,” had large positive Mnsqs (1.55 and 2.57) and large positive Zstds (1.04 and 1.2). The infit mean scores, Mnsq (1.02) and Zstd (-.4), were close to their expected values of 1 and 0; the outfit mean scores, Mnsq (1.30) and Zstd (-.4), were relatively close to their expected values of 1 and 0.

Table 10

Item Statistics for Frequency and Intensity Measures of Initiating

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
Does things before ask	1.25	.42	.83	-.7	.84	-.5
Takes action	.71	.42	.74	-1.1*	.63	-1.3*
Approaches new	-1.97	.43	1.15	.6	2.08	2.3*
M	.00	.43	.91	-.4	1.18	.2
SD	1.41	.00	.18	.7	.64	1.5
Intensity measure						
Takes action	1.95	.37	.52	-2.5*	.37	-2.3*
Does things before ask	1.81	.38	.99	.0	.96	-.1
Approaches new	-3.77	.49	1.55	1.4*	2.57	1.2*
M	.00	.41	1.02	-.4	1.30	-.4
SD	2.67	.05	.42	1.6	.93	1.5

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As seen in Table 11, the range of item calibration for the observed frequency measure for the ethical behavior scale was from -1.04 to .87. All six items adhered to acceptable parameters for the frequency measure. The infit mean scores, Mnsq (1.01) and

Zstd (.0), closely adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (.89) and Zstd (-.3), were close to their expected values of 1 and 0.

Table 11

Item Statistics for Frequency and Intensity Measures of Ethical Behavior

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
Stands up for	.87	.49	1.15	.4	1.14	.4
Demonstrates commit	.63	.50	.95	-.1	1.03	.1
Uses principles of truth	.12	.52	.86	-.4	.78	-.6
Demonstrates integrity	-.15	.53	.91	-.2	.75	-.7
Speak the truth	-.43	.54	.92	-.2	.74	-.6
Adheres to ethical	-1.04	.57	1.25	.6	.88	-.2
M	.00	.52	1.01	.0	.89	-.3
SD	.64	.03	.14	.4	.15	.4
Intensity measure						
Stands up for	.69	.34	1.64	2.2*	1.82	2.5*
Demonstrates integrity	.12	.34	1.36	1.3*	1.31	1.1*
Demonstrates commit	.00	.34	.54	-2.3*	.55	-2.1*
Uses principles of truth	-.11	.34	1.10	.4	.96	-.1
Speak the truth	-.23	.34	.63	-1.8*	.62	-1.7*
Adheres to ethical	-.47	.35	.64	-1.8*	.61	-1.8*
M	.00	.34	.99	-.3	.98	-.4
SD	.36	.00	.41	1.7	.46	1.7

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

The range of item calibration for the observed intensity measure for ethical behavior scale was from -.47 to .69 (see Table 11). Item 7.2, "Adheres to ethical standards," Item 7.3, "Stands up for what is right," Item 7.5, "Demonstrates a clear commitment to ethical practices," Item 7.6, "Speaks the truth," misfitted the Rasch rating scale model, as indicated by large negative or positive Mnsqs or Zstds. The infit mean scores, Mnsq (.99) and Zstd (-.3), closely adhered to their expected values of 1 and 0; the outfit mean scores, Mnsq (.98) and Zstd (-.4), were relatively close to their expected values of 1 and 0.

As seen in Table 12, the range of item calibration for the observed frequency measure for the developing human capital scale was from -1.95 to 1.43. Item 8.5, "Generates opportunities for individual growth and economic performance," had large negative Zstds (-2.9 and-2.5) for both infit and outfit statistics. Item 8.6, "Identifies the next generation of leaders," had large positive Mnsqs (1.52 and 2.22) and large positive Zstd (2.00 and 3.4). The infit mean scores, Mnsq (1.00) and Zstd (.0), adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (1.08) and Zstd (-.1), were close to their expected values of 1 and 0.

The range of item calibration for the observed intensity measure for developing human capital scale was from -.27 to 1.50 (see Table 12). All six items for the intensity measure misfitted the Rasch rating scale model, as indicated by the infit and/or outfit statistics. The infit mean scores, Mnsq (.96) and Zstd (-.3), were relatively close to their expected values of 1 and 0; the outfit mean scores, Mnsq (1.02) and Zstd (-.2), were close to their expected values of 1 and 0.

Table 12

Item Statistics for Frequency and Intensity Measures of Developing Human Capital

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
Identifies the next	1.43	.24	1.52	2.0*	2.22	3.4*
Expands human capacity	.49	.22	.80	-1.0	.83	-.8
Take a personal interest	.39	.22	.66	-1.8*	.84	-.7
Generates opportunities	.39	.22	.50	-2.9*	.54	-2.5*
Stretches the capabilities	-.75	.23	1.23	1.0	1.16	.7
Takes care of personnel	-1.95	.27	1.00	.0	.88	-.3
M	.00	.23	.95	-.5	1.08	-.1
SD	1.07	.02	.35	1.6	.54	1.8
Intensity measure						
Identifies the next	1.50	.29	1.15	.7	1.81	.71
Generates opportunities	.54	.30	.62	-1.9*	.65	-1.6*
Expands human capacity	.27	.30	.64	-1.8*	.59	-1.9*
Take a personal interest	-.27	.30	.71	-1.4*	.70	-1.3*
Stretches the capabilities	-.18	.30	1.37	1.4*	1.23	.9
Takes care of personnel	-.27	.30	.71	-1.4*	.70	-1.3*
M	.00	.30	.96	-.3	1.02	-.2
SD	1.01	.00	.32	1.4	.43	1.5

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance 1.

*Misfit item.

As seen in Table 13, the range of item calibrations for the observed frequency measure for the communicating scale was from -1.65 to .99. All five items appeared to

be within acceptable fit parameters. The infit mean scores, Mnsq (1.00) and Zstd (.0), adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (1.08) and Zstd (-.1), were close to their expected values of 1 and 0. The infit mean scores, Mnsq (1.00) and Zstd (.0), adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (1.08) and Zstd (-.1), were close to their expected values of 1 and 0.

The range of item calibrations for the observed intensity measure for the communicating scale was from -.75 to .72 (see Table 13). Item 9.2, "Offers others specific and detailed feedback," and Item 9.4, "Provides feedback to subordinates/team members," had large negative Zstds. Item 9.3, "Listens to suggestions and comments and makes changes if the situation allows it," had large positive Mnsqs and Zstds. The infit mean scores, Mnsq (.97) and Zstd (-.4), were close to their expected values of 1 and 0; however, the outfit mean scores, Mnsq (.88) and Zstd (-.7), were not as close to their expected values of 1 and 0.

Table 13

Item Statistics for Frequency and Intensity Measures of Communicating

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Frequency measure						
Communicates the org	.99	.29	.92	-.3	.95	-.2
Speaks openly	.90	.29	.89	-.5	.95	-.2
Offers others specific	.11	.30	.80	-.8	.79	-.9
Provides feedback	-.35	.31	1.15	.6	1.03	.1
Listens to suggestions	-1.65	.33	1.21	.8	1.03	.1
M	.00	.30	.99	-.1	.95	-.2
SD	.96	.01	.16	.6	.09	.4
Intensity measure						
Speaks openly	.72	.31	1.00	.0	.94	-.3
Communicates the org	.32	.32	1.06	.3	1.01	.0
Offers others specific	.12	.32	.61	-1.9*	.56	-1.9*
Provides feedback	-.42	.33	.45	-2.8*	.45	-2.5*
Listens to suggestions	-.75	.33	1.75	2.5*	1.45	1.4*
M	.00	.32	.97	-.4	.88	-.7
SD	.52	.01	.45	1.8	.36	1.4

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As seen in Table 14, the range of item calibrations for the observed frequency measure for the Decision Making scale was from -1.28 to 1.56. Item 10.3, "Evaluates progress against benchmarks," and Item 10.5, "Gets down to the real brass tacks," had large positive Zstds. Item10.2, "Uses an interdisciplinary approach in solving problems," Item 10.6, "Defines the root of the problem," and Item 10.7, "Seeks information from multiple sources to define a task or problem," had large negative Zstds.

Table 14

Item Statistics for Frequency Measure of Decision Making

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Benchmarks products	1.56	.24	.94	-.3	1.12	.5
Evaluates progress	1.32	.24	1.34	1.4*	1.33	1.3*
Uses an interdisciplinary	.39	.24	.85	-.7	.84	-.7
Makes difficult decisions	-.44	.25	.72	-1.4*	.72	-1.3*
Gets down to brass tacks	-.75	.25	1.31	1.3*	1.28	1.0*
Defines root	-.81	.25	.66	-1.7*	.70	-1.3*
Seeks information	-1.28	.26	.83	-.8	.73	-1.0
M	.00	.25	.95	-.3	.96	-.2
SD	1.03	.01	.25	1.1	.25	1.0

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

The range of item calibration for the observed intensity measure for the Decision Making scale was from -1.23 to 1.53 (see Table 15). Item 10.3, "Evaluates progress against benchmarks," had large negative infit and outfit Zstds (-1.3 and-1.2) statistics. Item 10.5, "Gets down to the real brass tacks," had large positive Zstds. Item 10.6, "Defines the root of the problem," had large negative infit and outfit Zstds (-2.6 and-2.6) statistics. The infit mean scores, Mnsq (1.14) and Zstd (.6), were close to their expected values of 1 and 0; the outfit mean scores, Mnsq (1.06) and Zstd (-.2), were relatively close to their expected values of 1 and 0.

Table 15

Item Statistics for Intensity Measure of Decision Making

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Benchmarks products	1.53	.29	1.20	.8	1.25	1.0
Evaluates progress	.95	.29	.73	-1.3*	.75	-1.2*
Uses an interdisciplinary	.38	.29	1.03	.1	1.02	.1
Makes difficult decisions	-.62	.29	.93	-.3	.90	-.4
Gets down to brass tacks	-.62	.29	1.24	1.0*	1.30	1.2*
Defines root	-.37	.29	.54	-2.6*	.54	-2.6*
Seeks information	-1.23	.30	1.14	.6	1.06	.2
M	.00	.29	.97	-.2	.97	-.2
SD	.91	.00	.24	1.2	.25	1.2

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

As seen in Table 16, the range of item calibration for the observed frequency measure for the changing scale was from -.70 to .97. Item 11.1, "Experiments with processes and discovers new opportunities and solutions," and Item 11.2, "Regards change as a source of vitality and opportunity," had large positive Zstd. Item 11.3, "Leads change and removes barriers to change," Item 11.5, "Is aware of changing directions relative to a discipline, industry, or operating environment," Item 11.6, "Applies technologies to view, explore, analyze and create options for organizational change," Item 11.7, "Is able to abandon outmoded assumptions and beliefs to experiments with some alternative concepts and ideas," had large negative Zstd parameter estimates.

Table 16

Item Statistics for Frequency Measure of Changing

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Experiments processes	.97	.26	1.48	1.8*	1.44	1.6*
Applies technologies	.32	.25	.79	-1.0	.80	-.9
Changes work process	.14	.25	.99	.0	1.01	.1
Regards changes as	-.04	.25	1.48	2.0*	1.45	1.8*
Is able to abandon	-.16	.25	.68	-1.7*	.66	-1.8*
Is aware of changing	-.52	.25	.60	-2.3*	.60	-2.1*

(table continues)

Item	Measure	Error	Infit	Outfit

			Mnsq	Zstd	Mnsq	Zstd
Leads change	-.70	.25	.67	-1.8*	.80	-1.0*
M	.00	.25	.96	-.4	.97	-.3
SD	.52	.00	.35	1.6	.33	1.4

Note. Mnsq = mean square; Zstd = standardized mean square.

*Misfit Item

The infit mean scores, Mnsq (.96) and Zstd (-.4), closely followed their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (.97) and Zstd (-.3), were close to their expected values of 1 and 0.

The range of item calibration for the observed intensity measure for the decision-making scale was from -1.23 to 1.53 (see Table 17). Item11.1, "Experiments with processes and discovers new opportunities and solutions," demonstrated evidence of misfit on both infit and outfit parameters. Item 11.2, "Regards change as a source of vitality and opportunity," Item 11.4, "Changes work process to maximize efficiency and effectiveness," and Item 11.5, "Is aware of changing directions relative to a discipline, industry, or operating environment," had large negative Ztds.

Table 17

Item Statistics for Intensity Measure of Changing

Item	Measure	Error	Infit		Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Experiments processes	1.14	.28	1.53	2.2*	1.55	2.3*
Applies technologies	.26	.29	.81	-.9	.91	-.4
Changes work process	.35	.29	.64	-1.8*	.62	-1.9*
Is aware of changing	-.24	.29	.80	-.9	.75	-1.1*
Regards changes as	-.41	.29	.74	-1.2*	.69	-1.4*
Is able to abandon	-.41	.29	1.18	.7	1.14	.5
Leads change	-.68	.30	1.12	.5	1.03	.1
M	.00	.29	.97	-.2	.96	-.3
SD	.58	.01	.29	1.3	.30	1.3

Note. Mnsq = mean square with expectation 1; Zstd = standardized mean square with mean of 0 and variance of 1.

*Misfit item.

The infit mean scores, Mnsq (.97) and Zstd, (-.2), closely adhered to their expected values of 1 and 0; likewise, the outfit mean scores, Mnsq (.96) and Zstd (-.3), were close to their expected values of 1 and 0.

The psychometric analysis validated 53 items and 10 competency scales (see Table 18). These items adhered to Rasch rating scale model and defined the nature of each competency.

Table 18

Validated ALCP Items

Item	Scale
	1.0 Influencing and Motivating
1.1	Instills a unifying, challenging, and rewarding spirit.
1.2	Influences others to help achieve work-related task and or objective.
1.3	Offers encouragement to others to improve motivation and performance.
1.4	Acts as a catalyst and motivates others.
1.5	Brings out the best in people.
	2.0 Learning
2.1	Creates a learning environment.
2.2	Turns situations into a learning experience.
2.3	Promotes life-long learning as a way of life.
2.4	Fosters experimentation and learning.
2.5	Promotes innovation.
	3.0 Managing
3.1	Uses time and resources efficiently.
3.2	Sets priorities with an appropriate sense of what is most important or urgent.
3.3	Manages operations and provides direction.
3.4	Sees that a job is completed.
3.5	Performs essentials task in ambigious situation.
3.6	Defines performance outcomes and boundaries.
3.7	Sets goals, organizes work effectively, and use resources appropriately.
	4.0 Envisioning
4.1	Defines a vision of future realities.
4.2	Sees the light at the end of the tunnel.

(table continues)

Item	Scale
4.3	Creates strategic visions, who we are, where we are going, what we can be.
4.4	Sees the “Big Picture”.
	5.0 Teaming
5.1	Fosters teamwork, cooperation, and collaboration.
5.2	Generates participation through coaching.
5.3	Fosters co partnering and interdependence among team members.
5.4	Guides to reach consensus.
5.5	Fosters an esprit de corps.
	6.0 Ethical Behavior
6.1	Uses principles of truth and honesty.
6.2	Adheres to ethical standards.
6.3	Stands up for what is right.
6.4	Demostrates integrity
	6.0 Ethical Behavior
6.5	Demonstrates a clear commitment to ethical practices.
6.6	Speaks the Truth.
	7.0 Developing Human Capital
7.1	Expands human capacity through development programs.
7.2	Takes care of personnel.
7.3	Stretches the capabilities of employees.
7.4	Takes a personal interest in the career development of each team member.
7.5	Generates opportunities for individual growth.
7.6	Identifies the next generation of leaders.
	8.0 Communicating
8.1	Speaks openly and directly about performance problems with others.
8.2	Offers others specific and detailed feedback.

(table continues)

Item	Scale
	8.0 Communicating
8.3	Listens to suggestions and comments and makes changes if the situation allows it.
8.4	Communicates the organization's values in terms of specific statements on specific issues.
	9.0 Decision making
9.1	Benchmarks products and processes.
9.2	Uses an interdisciplinary approach in solving problems.
9.3	Makes difficult decisions and follows up.
9.4	Gets down to the real brass tacks! Defines it, examines it, analyzes it and tries to solve the problem.
9.5	Seeks information from multiple sources to define a task or problem.
	10.0 Changing
10.1	Experiments with processes and discovers new opportunities and solutions.
10.2	Regards change as a source of vitality and opportunity.
10.3	Leads change and removes barriers to change.
	10.0 Changing
10.4	Changes work process to maximize efficiency and effectiveness.
10.5	Applies technologies to view, explore, analyze and create options for organizational change.
10.6	Abandons outmoded assumptions and beliefs to experiment with some alternative concepts and ideas.
	11.0 Effectiveness
11.1	Overall, do you consider the person you are rating to be effective in their job role?
11.2	Is the person you are rating effective in linking the needs of people, teams, and the organization?

Research Question 2

2. How well do the person's abilities fit the Rasch rating scale measurement model, using the 11 scales of the ALCP?

Mean scores for person ability by scale for the frequency behavior measure are presented in Table 19. Person ability measures ranged from 1.03 to 2.68 logits. Ability estimates by leader for each of the 11 scales are in Appendix E. For this sample, 41 ratings were recorded; however, the number of ability estimates varied for scale, depending on the number of extreme responses identified (i.e., persons who responded the same to all items were eliminated from the analysis). The following are the number of realizations analyzed for each scale: Influencing and Motivating, 36 responses; Learning, 40 responses; Managing, 38 responses; Envisioning, 39 responses; Teaming, 39 responses; Initiating, 34 responses; Ethical Behavior, 16 responses; Developing Human Capital, 40 responses; Communicating, 34 responses; Decision making, 39 responses; Changing, 38 responses (see Appendix D for a visual representation of ability estimates).

Table 19

Person Ability Mean Scores for Frequency Measure

Scale	Average measure	Average error	Average infit		Average outfit	
			Mnsq	Zstd	Mnsq	Zstd
Influencing and Motivating	2.32 (2.20)	.77 (.11)	.94 (.68)	-.4 (1.4)	.94 (.68)	-.4 (1.4)

(table continues)

Scale	Average Measure	Average Error	Average Infit		Average Outfit	
			Mnsq	Zstd	Mnsq	Zstd
Learning	1.58 (1.93)	.78 (.05)	.99 (1.19)	-.5 (1.5)	1.01 (1.22)	-.5 (1.5)
Managing	1.83 (1.48)	.56 (.09)	.97 (.81)	-.5 (1.7)	.95 (.79)	-.5 (1.6)
Envisioning	2.05 (3.10)	.96 (.04)	.97 (1.00)	-.4 (1.2)	.95 (.97)	-.4 (1.1)
Teaming	2.20 (2.04)	.70 (.18)	.96 (.74)	-.4 (1.4)	.94 (.76)	-.4 (1.4)
Initiating	2.08 (3.73)	1.44 (.11)	.87 (1.13)	-.4 (1.3)	1.18 (2.00)	-.5 (1.1)
Ethical Behavior	2.68 (2.35)	.88 (.14)	.97 (1.01)	-.5 (1.5)	.89 (.99)	-.6 (1.4)
Developing Human Capital	1.03 (2.03)	.62 (.12)	1.02 (1.19)	-.4 (1.5)	1.08 (1.54)	-.3 (1.5)
Communicating	1.60 (2.20)	.81 (.10)	.98 (.75)	-.3 (1.2)	.95 (.74)	-.3 (1.2)
Decision-making	1.54 (1.60)	.60 (.07)	.95 (.83)	-.5 (1.4)	.96 (.89)	-.4 (1.4)
Changing	1.34 (1.77)	.59 (.06)	.94 (.82)	-.6 (1.7)	.97 (.87)	-.5 (1.7)

Note. Values enclosed in parentheses are standard deviations.

Table 20 reports the number of judges who rated their leader 1+ logit on the frequency behavior measure. Recall that 1+ logit is 1 standard deviation above average.

Table 20

Person Ability Measure by Scale for Frequency Behavior Measure

Scale	Logit range	Person ability
Influencing and Motivating	5.83 to -4.32	29 out of 36 judges rated their leader 1+ logit
Learning	4.61 to -3.87	28 out of 40 judges rated their leader 1+ logit
Managing	6.09 to -2.55	29 out of 38 judges rated their leader 1+ logit
Envisioning	7.47 to -5.87	27 out of 39 judges rated their leader 1+ logit
Teaming	5.13 to -3.57	31 out of 39 judges rated their leader 1+ logit
Initiating	7.11 to -4.76	22 out of 34 judges rated their leader 1+ logit
Ethical Behavior	5.22 to -1.74	13 out of 16 judges rated their leader 1+ logit
Developing Human Capital	4.02 to -6.24	27 out of 40 judges rated their leader 1+ logit
Communicating	6.18 to -2.76	20 out of 34 judges rated their leader 1+ logit
Decision making	4.41 to -2.31	31 out of 39 judges rated their leader 1+ logit
Changing	3.27 to -3.66	27 out of 38 judges rated their leader 1+ logit

Mean scores for person ability by scale for the intensity behavior measure are presented in Table 21. Person ability measures ranged from .30 to 2.30 logits. Ability estimates by leader are in Appendix E. For this sample, 41 ratings were recorded; however, the number of ability estimates varied for scale depending, on the number of extreme responses identified (i.e., persons who responded the same to all items were eliminated from the analysis). The following are the number of realizations analyzed for

each scale: Influencing and Motivating scale, 41 responses; Learning, 41 responses; Managing, 41 responses; Envisioning, 41 responses; Teaming, 41 responses; Initiating 41 responses; Ethical Behavior, 35 responses; Developing Human Capital, 41 responses; Communicating, 41 responses; Decision-Making, 41 responses; Changing, 41 responses (see Appendix D for a visual representation for ability estimates).

Table 21

Person Ability Mean Scores for Intensity Measure

Scale	Average measure	Average error	Average infit		Average outfit	
			Mnsq	Zstd	Mnsq	Zstd
Influencing and Motivating	1.32 (3.44)	.94 (.10)	.92 (.64)	-.3 (1.2)	.94 (.64)	-.3 (1.2)
Learning	.30 (2.41)	.83 (.03)	.97 (.99)	-.4 (1.3)	.98 (1.01)	-.4 (1.3)
Managing	.82 (1.71)	.60 (.06)	.96 (.86)	-.5 (1.6)	.97 (.90)	-.5 (1.6)
Envisioning	1.36 (4.08)	1.18 (.40)	.78 (1.53)	-.6 (1.3)	.80 (1.59)	-.7 (1.3)
Teaming	1.40 (2.68)	.75 (.07)	.96 (.80)	-.5 (1.6)	.96 (.81)	-.5 (1.6)
Initiating	2.30 (4.33)	1.60 (.35)	.81 (1.48)	-.6 (1.3)	.89 (1.93)	-.4 (.9)
Ethical Behavior	1.74 (2.22)	.84 (.10)	.99 (1.60)	-.8 (1.9)	.98 (1.59)	-.8 (1.8)

(table continues)

Scale	Average measure	Average error	Average infit	Average outfit

			Mnsq	Zstd	Mnsq	Zstd
Developing	1.00	.80	.97	-.4	1.02	-.4
Human Capital	(3.06)	(.11)	(.80)	(1.4)	(1.02)	(1.4)
Communicating	1.46	.96	.89	-.6	.88	-.6
	(2.94)	(.14)	(.98)	(1.4)	(.98)	(1.4)
Decision-making	1.18	.71	.98	-.5	.97	-.5
	(2.18)	(.04)	(1.01)	(1.6)	(1.00)	(1.6)
Changing	.63	.71	.96	-.9	.96	-.9
	(2.15)	(.06)	(1.41)	(2.0)	(1.42)	(2.0)

Note. Values enclosed in parentheses are standard deviations.

Table 22 reports the number of judges who rated their leader 1+ logit on the intensity behavior measure. Recall that 1+ logit is 1 standard deviation above average.

Table 22

Person Ability Measure by Scale for Intensity Behavior Measure

Scale	Logit Range	Person Ability
Influencing and Motivating	6.18 to -9.06	26 out of 41 judges rated their leader 1+ logit
Learning	4.79 to -5.37	18 out of 41 judges rated their leader 1+ logit
Managing	5.50 to -4.20	20 out of 41 judges rated their leader 1+ logit
Envisioning	9.60 to -6.20	25 out of 39 judges rated their leader 1+ logit

(table continues)

Scale	Logit Range	Person Ability
Teaming	5.33 to -6.13	25 out of 41 judges rated their leader 1+ logit

Initiating	12.82 to -7.46	25 out of 41 judges rated their leader 1+ logit
Ethical Behavior	5.22 to -4.85	26 out of 35 judges rated their leader 1+ logit
Developing Human Capital	5.83 to -8.22	24 out of 41 judges rated their leader 1+ logit
Communicating	7.93 to -6.37	24 out of 41 judges rated their leader 1+ logit
Decision making	6.32 to -4.47	24 out of 41 judges rated their leader 1+ logit
Changing	3.26 to -4.80	22 out of 41 judges rated their leader 1+ logit

Research Question 3

3. What are the item separation and reliability coefficients for the 11 ALCP scales?

As seen in Table 23, item separation indices ranged from .79 to 4.48 for the frequency measure of behavior. It has been suggested that a scale must reach a two-item difficultly strata to be useful for scale definition (Wright & Masters, 1982;Wright & Stone, 1979). The Influencing and Motivating scales and the Ethical Behavior scale do not meet the two-item difficultly strata criteria and have poor reliability coefficients. The remaining scales meet the criteria (see Appendix D for a visual representation of item separation for each scale).

Table 23

Item Separation and Reliability Coefficients for Frequency Measures

Scale	Separation	Reliability	Item strata
Influencing and Motivating	.79	.39	1.39
Learning	1.74	.75	2.65
Managing	1.45	.68	2.27
Envisioning	3.21	.91	4.61
Teaming	1.80	.76	2.73
Initiating	3.16	.91	4.55
Ethical Behavior	.71	.34	1.28
Developing Human Capital	4.48	.95	6.31
Communicating	3.00	.90	4.33
Decision-making	3.99	.94	5.65
Changing	1.82	.77	2.76

As seen in Table 24, item separation indices range from .00 to 6.31 for the intensity measure of behavior. It has been suggested that a scale must reach a two-item difficultly strata to be useful for scale definition (Wright & Masters, 1982;Wright & Stone, 1979). The Influencing and Motivating, Teaming, and Ethical Behavior scales do not meet the two-item difficultly strata criteria and have poor reliability coefficients. The remaining scales meet the criteria (see Appendix D for a visual representation of item separation for each scale).

Table 24

Item Separation and Reliability Coefficients for Intensity Measures

Scale	Separation	Reliability	Item strata
Influencing and Motivating	.00*	.00*	.33*
Learning	2.19	.93	3.25
Managing	1.65	.73	2.53
Envisioning	1.74	.75	2.65
Teaming	1.13*	.56*	1.84*
Initiating	6.31	.98	8.75
Ethical Behavior	.33*	.10*	.77*
Developing Human Capital	3.21	.91	4.61
Communicating	1.27	.62	2.03
Decision-making	2.97	.90	4.30
Changing	1.72	.75	2.63

Research Question 4

4. What are the person separation and reliability coefficients for the 11 ALCP scales?

As seen in Table 25, person separation indices for the frequency measure of behavior ranged from 2.25 to 3.07. All 11 scales of the ALCP separate leaders into a two-person stratum and purport good measures of consistency (see Appendix D for a visual representation of person separation for each scale).

Table 25

Person Separation and Reliability Coefficients for Frequency Measures

Scale	Separation	Reliability	Person strata
Influencing and Motivating	2.63	.87	3.84
Learning	2.25	.84	3.33
Managing	2.39	.85	3.52
Envisioning	3.07	.90	4.43
Teaming	2.64	.87	3.85
Initiating	2.45	.86	3.60
Ethical Behavior	2.42	.85	3.56
Developing Human Capital	3.04	.90	4.39
Communicating	2.51	.86	3.68
Decision-making	2.47	.86	3.63
Changing	2.83	.89	4.11

As seen in Table 26, person separation indices for the behavior intensity measure ranged from 2.42 to 3.63. All 11 scales of the ALCP separate leaders into at least two-level strata and purport good measures of consistency (see Appendix D for a visual representation of person separation for each scale).

Table 26

Person Separation and Reliability Coefficients for Intensity Measures

Scale	Separation	Reliability	Person strata
Influencing and Motivating	3.50	.92	5.00
Learning	2.72	.88	3.96
Managing	2.68	.88	3.91
Envisioning	3.11	.91	4.48
Teaming	3.42	.92	4.89
Initiating	2.45	.86	3.60
Ethical Behavior	2.42	.85	3.56
Developing Human Capital	3.63	.93	5.17
Communicating	2.87	.89	4.16
Decision-making	2.91	.89	4.21
Changing	2.85	.89	4.13

Research Question 5

5. Does the ALCP predict leader effectiveness as measured by the LRI and FCP criteria?

The competency scales of the ALCP were rescaled so that the lowest person measure was 0 and the highest, 100. See the WINSTEPS manual for scaling procedures (Linacre & Wright, 1999, p. 71). The rescaled frequency and intensity measures were summed and divided by two to create composite behavioral competency measures. As a result, 11 behavioral competency scales were used as independent variables in a

multinomial-ordered nonlinear probability model. The dependent variable was the ordered response for effectiveness. An ordered probit model was estimated for the proposed 11-scale model specified in chapter 3. Results of model prediction are shown in Table 27.

Table 27

Goodness of Fit Measures

	LRI	FCP				
		Y=0	Y=1	Y=2	Y=3	Y=4
Percent	12%	0%	0%	4%	96%	17%

Note. LRI = Likelihood Ratio Index; FCP = Frequency of Correct Prediction; Y=0 represents Not Effective; Y=1 represents Somewhat Effective; Y=2 represents Moderately Effective; Y=3 represents Highly Effective; and Y=4 represents Extremely Effective.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The purpose of this study was to develop the Adaptive Leadership Competency Profile (ALCP) and to determine the associated psychometric properties utilizing the Rasch rating scale measurement model. This study sought to answer five research questions. The answers to these questions provided psychometric evidence for ALCP.

The items of the ALCP 2.0 are valid; therefore, human resource practitioners can be confident that the competencies of the ALCP are effectively measuring leadership behaviors. More importantly, the inference made from such measures is sound, credible, and precise.

The ALCP improves person ability measures. Traditionally, the psychometrics of leadership inventories and profiles have applied classical measurement theory. The inherent problem with classical measurement theory is that it does not posses equal intervals and linear measures between scale thresholds. The 11 scales of the ALCP were calibrated with the Rasch rating scale model. Rasch measurement is a method for obtaining linear measures (qualified by quality control fit statistics) from stochastic observations of ordered category responses (Wright & Masters, 1982). A linear ability measure provides meaningful interpretation of individual difference between people. This becomes critical when such measures are used in the evaluation of performance that

affects promotion and/or merit incentives. The ALCP significantly improves the measurement of leadership by yielding linear ability scores.

Before measurement can occur, a calibrated scale that marks the variable must be developed. The items qualitatively define the ALCP competencies. Item separation is key to understanding the width of each scale. It provides a detailed understanding of how much of the competency is be measured by the scale items. The items must be sufficiently well separated in difficulty to identify the direction and meaning of the variable. The success of measurement depends on the extent to which items are separated. The item calibrations provide a description of the reach and hierarchy of the variable. It has been suggested that a scale must reach a two-item difficultly strata before a useful scale definition exists (Wright & Masters, 1982;Wright & Stone, 1979). Results from the psychometrics analysis indicated that, for the frequency measure of behavior, the Influencing and Motivating and the Ethical Behavior scales did not meet the two-item difficult strata criteria; however, the nine remaining scales did meet the criteria and purport good measures of score consistency and separation. As for the intensity measure of behavior, the Influencing and Motivating, Teaming, and Ethical Behavior scales did not meet the two-item difficult strata criteria. Scale items were studied and revision were made on some items. Due the fact that ethical behavior is fundamental to leadership, it is quite likely that this scale might not ever render levels of separation. However, additional items could be developed to try to extend the width of the scale. In regards to the Influencing and Motivating and Ethical Behavior scales for the frequency measure, it is probable that the scale items failed to adequately separate due the homogeneity of the

sample. Furthermore, additional items could be developed to extend the width of the scales. It is interesting to note that the teaming scale provided adequate separation for the frequency measure but failed on the intensity measure. This finding indicates a differentiation on frequency of behavior but not intensity of behavior.

Performance assessments are implemented primarily for two reasons: (a) to foster individual growth through an organized feedback process, and (b) to provide an indicator for promotion and/or merit incentives. The latter reason is based on the premise that ability or performance can be accurately measured and differentiated. The identification of individual difference is dependent upon the heterogeneity of the sample. All 11 scales of the ALCP for the frequency and intensity measure separate leaders into a two-person stratum and purport good measures of consistency (see Appendix D for a visual representation of person separation for each scale). The results of the psychometric analysis clearly demonstrated that ALCP scales separate individual leadership differences and can be used as 360-degree performance feedback tool. The idea of separation is fundamental to a performance assessment when the scale measures are used as an indicator for hiring, promotion, and/or merit incentives.

The ALCP predicts leader effectiveness as measured by the LRI and FCP. This result provides evidence for predictive validity and demonstrates that the competencies of the ALCP are valid and critical to the measurement and specification of effective leadership. The ALCP provides an inference for a person's future capability as an effective leader. Essentially, high leadership competency scores on the ALCP are

indicative of leadership effectiveness; therefore, the score could be used as an indicator for job selection or promotion.

Impact of the Study on the Field of Training and Development

Leadership development enables leaders to guide their organizations to greater levels of performance by proactive rather than reactive means. It enables organizations to create better products and faster services and to be more competitive. Leadership development is about the growth of individuals and of the organization. The Adaptive Leadership Competency Profile is a validated 360-degree performance-assessment tool that measures macro-leadership behaviors that are congruent with the 21st century business culture. Many of the published leadership inventories are based on traditional predictors of transactional leadership (Bass, 1990), whereas the ALCP is eclectic and rooted to situational leadership, servant-leadership, contingency theory, transformational leadership, new science theory, and 600 interviews with organizational employees that defined effective leaders and leadership. Many have asserted that the measurement of leadership is simply not possible and that a score on a leadership profile does not truly represent the person's leadership. So many complex factors are involved in leadership that it cannot adequately be described by a simple number such as a score on a test or scale. This is true, but it is also equally true of all measurement. For example, scientists have broken the universe's speed limit. For generations, physicists believed that there was nothing faster than light moving through a vacuum—a speed of 186,000 miles per second (i.e., a measurement). But in an experiment in Princeton, New Jersey, physicists

sent a pulse of laser light through cesium vapor so quickly that it left the chamber before it had even finished entering.

The ALCP does not measure academic aptitude and/or knowledge content. Such tests do not predict job performance or success in life and are often biased against minorities (Spencer et al., 1990). The ALCP is grounded in McClelland's (1973) competency research (i.e., identifying "competency" variables that do predict job performance and that are not biased, or at least, less biased, by race, sex, and/or socioeconomic factors).

The ALCP measures frequency and intensity of leadership behavior. Frequency is a measure of how often the behavior is used, and intensity is a measure of degree, magnitude, or highly focused operating style. The frequency measure of behavior is a standard behavior measure and is the most concrete of all psychometrics. Behavior can be measured or counted reliably. The underlying assumption of this measure is that all leadership behavior is uniformly manifested with the same level of intensity. Therefore, each item is weighed equally in the determination of the score. For example, it is assumed that "defining the root of the problem" represents the same level or intensity as "leading change and removing barriers to change." Clearly, this is not so. Therefore, the ALCP includes an intensity measure.

The intensity measure of behavior is not commonplace in leadership research. The promising behaviorally oriented method for the study of leadership is one that shifts attention away from the leader's frequency of behavior to the leader's intensity of behavior (Bass, 1990). The ALCP profiles frequency and intensity of behavior as well as

a summative composite measure of behavior. This composite measure is a new competency measure and significantly adds to the explained variance of leadership behavior.

Results from this study validated 10 competencies: (a) influencing and motivating, (b) learning, (d) managing, (e) envisioning, (f) teaming, (g) ethical behavior, (h) developing human capital, (i) communicating, (j) decision-making, and (k) changing and 55 items. The Adaptive Leadership Competency Profile 2.0 (see Appendix F) is able to guide organizational development strategies and focus leadership training and development programs. The ACLP provides organizations with a valid 360-degree performance-assessment tool that can assist in identifying, selecting, and developing organizational leaders.

Recommendation for Further Study

Based upon the findings in this study, several recommendations can be suggested for future research with the ALCP.

1. This study should be replicated in other organizations and industries. A comparison of item calibrations would confirm the stability of the qualitative validity (i.e., content and construct). Rater bias could be calculated with a facet analysis.

2. Use the ALCP to develop a profile of types of leaders and/or leadership based on the combination of behaviors and/or levels of intensity.

3. Develop training modules for the 11 competencies; implement leadership training and design a quasi-experimental research with repeated measures to assess the

change in performance. The interaction between frequency and intensity of behavior by level of leadership should also be tested.

4. Shift the philosophical underpinnings of the ALCP. Challenge the traditional assumption that composite measures of different behaviors represent leadership; instead, assume that Adaptive Leadership is one domain; that is, a behavioral domain (Hauenstien, 1998). Perform Rasch rating analysis to assess evidence of item and person fit and item and person separation.

5. Based on the assumption in recommendation 4, test Hauenstien's (1998) behavior model. The ALCP test items are ordered from less to more by the Rasch rating scale model. Observe and calculate the congruence between the item order and the behavior domain. If an adequate congruency does exist, then a behavioral developmental profile could be generated for organizational leaders.

APPENDIX A

UNIVERSITY OF NORTH TEXAS INSTITUTIONAL REVIEW BOARD

UNIVERSITY of NORTH TEXAS

Office of Research Services

May 22, 2000

Charles Todd Sherron
401 W. Sycamore
Denton, TX 76201

RE: Human Subjects Application No. 00-117

Dear Mr. Sherron,

Your proposal titled "The Validation of the Adaptive Leadership Competency Profile," has been approved by the Institutional Review Board and is exempt from further review under 45 CFR 46.101.

The UNT IRB must review any modification you make in the approved project. **Federal policy 21 CFR 56.109(e) stipulates that IRB approval is for one year only.**

Please contact me if you wish to make changes or need additional information.

Sincerely,

Reata Busby, Chair
Institutional Review Board

RB:sb

Please remember to send a copy of each institutional consent letter to me before working with the organization. RB

P.O. Box 305250 • Denton, Texas 76203-5250 • (940) 565-3940
Fax (940) 565-4277 • TDD (800) 735-2989 • www.unt.edu

APPENDIX B

APPROVAL OF THE STUDY BY ORGANIZATION

TXU Electric
P.O. Box 1002
Glen Rose, TX 76043-1002
Tel: 254 897 5202
Fax: 254 897 6652
jkelley2@txu.com

James J. Kelley
Vice President

This letter of agreement is signed to show that TXU-CPSES Engineering has agreed to allow Jeff Allen, Roger Ditzenberger and Todd Sherron from Applied Technology, Training and Development, Margie Tieslau from Economics, and Randy Schumacker from Educational Research and Statistics, all of the University of North Texas, to conduct the research study titled "*The Validation of the Adaptive Leadership Competency Profile*". Individual names of this organization's employees are not needed and will not be used in the study.

James J. Kelley, Vice President of
Nuclear Engineering and Support

7/6/00
Date

Todd Sherron Doctoral Candidate

7/28/00
Date

APPENDIX C

THE ADAPTIVE LEADERSHIP COMPETENCY PROFILE 1.0

The Adaptive Leadership Competency Profile

Organizations know that in order to keep growing their businesses in a highly competitive global marketplace, they need leaders who can stand up to the challenges encountered in decentralized business units, virtual offices, instantaneous transactions, and exacting customer service requirements, while continuing to represent the best interests of the organization and its employees.

Background

The Adaptive Leadership Competency Profile (ALCP) presents a macro model of leadership. The ALCP includes 11 competencies which are based on grounded theory results from a National Science Foundation research study, readings, and observations. The ALCP models ideal leader behaviors.

The ALCP is a 360-degree performance assessment tool. Assessment measures may be taking in several ways: 1) leaders may evaluate themselves; 2) the leaders' immediate supervisor may evaluate the leader; 3) the people reporting directly to the leader may evaluate them. The ALCP can assist organizations to develop leaders, improve their leadership development programs, and focus leadership-training programs.

Confidentiality

All data will be kept in the strictest confidence. The researchers have taken precautions to ensure individual confidentiality; as a result, the data records do NOT have identifiers for participants.

Sample Results

Aggregate profiles will be generated and provided to participating organizations FREE of charge. Results will be available 5 to 7 days after last data point is captured. Please note a predicted measure of leader effectiveness will not be determined until final analysis.

Instructions

Read each item carefully. Then respond in a manner that most accurately reflects your perception of the frequency and intensity of your leader's behavior (i.e. direct supervisor, team leader, boss, or manager; the person who you report to directly) . Frequency is a measure of how often the behavior is used; intensity is a measure of degree, magnitude, or highly focused operating style. Please note some individuals may not exhibit all of these behaviors all of the time. Therefore, to ensure accurate measurement and quality result carefully consider your response. Thank you.

Demographics:

Type of Organization:

I am rating my and their gender is

and their ethnicity is

My age is and my highest educational level is

My ethnicity is

Type of Industry:

Your organization number will be provided to you by your research liaison.

Org number:

	Competency	Frequency of Task	Intensity of Task
0.0	Example: Develops a plan for your department.	Performs this task DAILY Performs this task WEEKLY Performs this task MONTHLY Performs this task YEARLY Performs this task NEVER	EXTREMELY Intense HIGHLY Intense MODERATELY Intense SOMEWHAT Intense NOT Intense
	Influencing and Motivating	**Frequency of Task**	**Intensity of Task**
1.1	Knows how to influence without direction.	DAILY WEEKLY MONTHLY YEARLY NEVER	EXTREMELY HIGHLY MODERATELY SOMEWHAT NOT
1.2	Instills a unifying, challenging, and rewarding spirit.	DAILY WEEKLY MONTHLY YEARLY NEVER	EXTREMELY HIGHLY MODERATELY SOMEWHAT NOT
1.3	Influences others to help achieve work-related task and or objective.	DAILY WEEKLY MONTHLY YEARLY NEVER	EXTREMELY HIGHLY MODERATELY SOMEWHAT NOT

1.4	Offers encouragement to others to improve motivation and performance.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
1.5	Acts as a catalyst and motivates others.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
1.6	Brings out the best in people.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
	Learning	**Frequency of Task**	**Intensity of Task**
2.1	Creates a learning environment.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
2.2	Turns situations into a learning experiences.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
2.3	Promotes life-long learning as a way of life.	DAILY	EXTREMELY

		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
2.4	Fosters experimentation and learning.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
2.5	Promotes innovation and continuous learning.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
	Managing	Frequency of Task	Intensity of Task
3.1	Uses time and resources efficiently.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
3.2	Sets priorities with an appropriate sense of what is most important or urgent.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
3.3	Manages operations and provides direction.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY

		YEARLY	SOMEWHAT
		NEVER	NOT
3.4	Sees that a job is completed.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
3.5	Performs essential tasks in ambiguous situation.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
3.6	“Makes do” in tough situations.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
3.7	Defines performance outcomes and boundaries.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

3.8	Sets goals, organizes work effectively, and uses resources appropriately.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
	Envisioning	**Frequency of Task**	**Intensity of Task**
4.1	Imagines future events.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
4.2	Defines a vision of future realities.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
4.3	Sees the light at the end of the tunnel.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
4.4	Creates strategic visions (who we are, where we are going, what we can be).	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

4.5	Sees the “Big Picture”.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
	Teaming	**Frequency of Task**	**Intensity of Task**
5.1	Fosters teamwork, cooperation, and collaboration.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
5.2	Provides support to team in order to accomplish goals.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
5.3	Generates participation through coaching.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
5.4	Fosters co-partnering and interdependence among team members.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

5.5	Guides to reach consensus.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
5.6	Fosters espirt de corps (team spirit).	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
5.7	Works and plays well with others.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

	Initiating	Frequency of Task	Intensity of Task
6.1	Does things before being asked or forced by events.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
6.2	Takes action and seizes opportunities.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

6.3	Approaches new challenges with a “can do” attitude.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
	Ethical Behavior	**Frequency of Task**	**Intensity of Task**
7.1	Uses principles of truth and honesty.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
7.2	Adheres to ethical standards.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
7.3	Stands up for what is right.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
7.4	Demonstrates integrity.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

7.5	Demonstrates a clear commitment to ethical practices.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
7.6	Speaks the truth.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

	Developing Human Capital	**Frequency of Task**	**Intensity of Task**
8.1	Expands human capacity through development programs.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
8.2	Takes care of personnel.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
8.3	Stretches the capabilities of employees.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

8.4	Takes a personal interest in the career development of each team member.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
8.5	Generates opportunities for individual growth and economic performance.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
8.6	Identifies the next generation of leaders	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

	Communicating	**Frequency of Task**	**Intensity of Task**
9.1	Speaks openly and directly about performance problems with others.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
9.2	Offers others specific and detailed feedback.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

9.3	Listens to suggestions and comments and makes changes if the situation allows it.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
9.4	Provides feedback to subordinates/team members.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
9.5	Communicates the organization’s values in terms of specific statements on specific issues.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
	Decision Making/ Problem Solving	**Frequency of Task**	**Intensity of Task**
10.1	Benchmarks products and processes.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
10.2	Uses an interdisciplinary approach in solving problems.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

10.3 Evaluates progress against benchmarks.	DAILY	EXTREMELY
	WEEKLY	HIGHLY
	MONTHLY	MODERATELY
	YEARLY	SOMEWHAT
	NEVER	NOT
10.4 Makes difficult decisions and follows up.	DAILY	EXTREMELY
	WEEKLY	HIGHLY
	MONTHLY	MODERATELY
	YEARLY	SOMEWHAT
	NEVER	NOT
10.5 Gets down to the real brass tacks! Defines it, examines it, analyzes it and tries to solve the problem.	DAILY	EXTREMELY
	WEEKLY	HIGHLY
	MONTHLY	MODERATELY
	YEARLY	SOMEWHAT
	NEVER	NOT
10.6 Defines the root of the problem.	DAILY	EXTREMELY
	WEEKLY	HIGHLY
	MONTHLY	MODERATELY
	YEARLY	SOMEWHAT
	NEVER	NOT
10.7 Seeks information from multiple sources to define a task or problem.	DAILY	EXTREMELY
	WEEKLY	HIGHLY
	MONTHLY	MODERATELY
	YEARLY	SOMEWHAT
	NEVER	NOT

	Changing	Frequency of Task	Intensity of Task
11.1	Experiments with processes and discovers new opportunities and solutions.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
11.2	Regards change as a source of vitality and opportunity.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
11.3	Leads change and removes barriers to change.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
11.4	Changes work process to maximize efficiency and effectiveness.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT
11.5	Is aware of changing directions relative to a discipline, industry, or operating environment.	DAILY	EXTREMELY
		WEEKLY	HIGHLY
		MONTHLY	MODERATELY
		YEARLY	SOMEWHAT
		NEVER	NOT

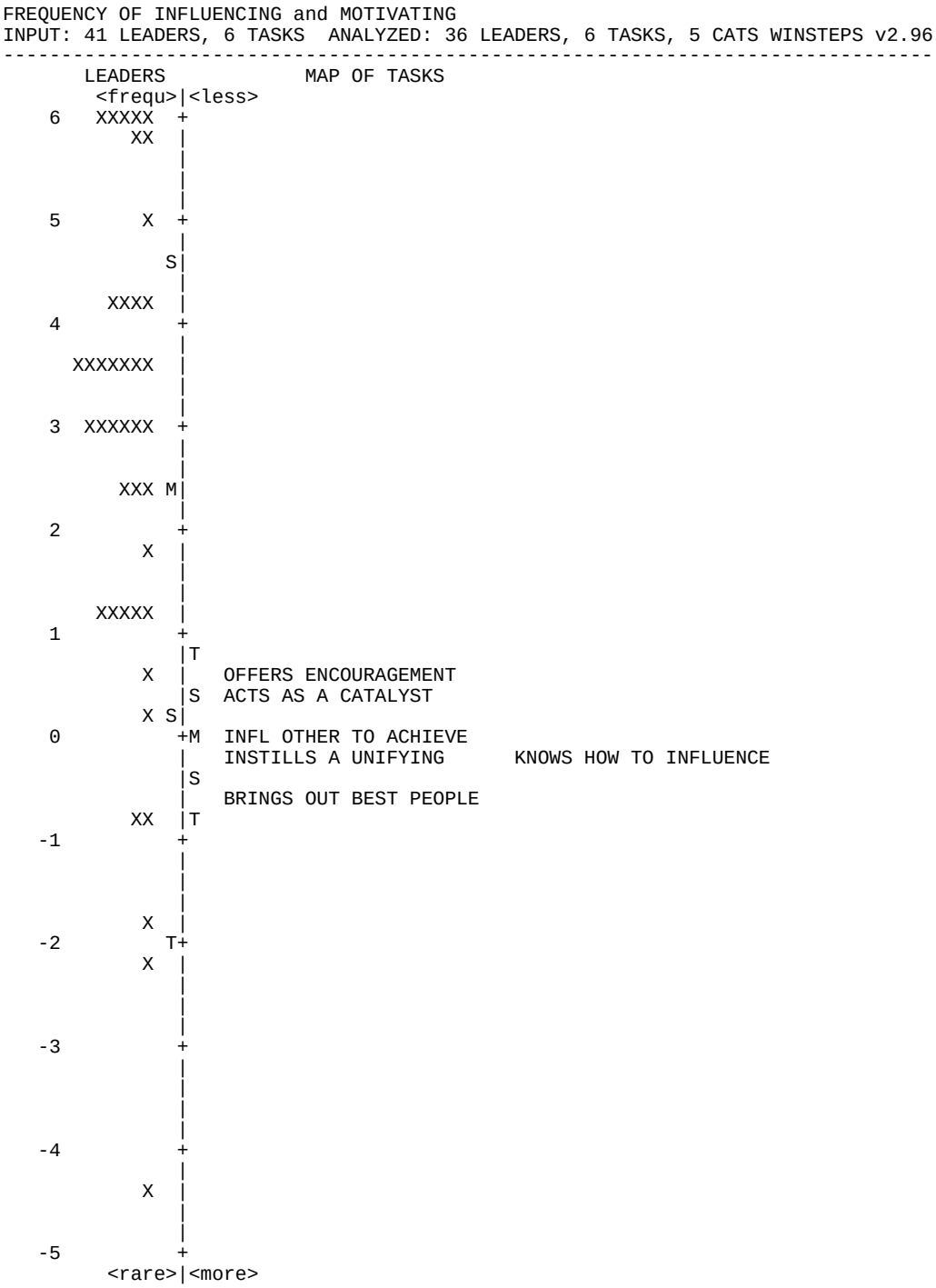
11.6	Applies technologies to view, explore, analyze and create options for organizational change.	DAILY WEEKLY MONTHLY YEARLY NEVER	EXTREMELY HIGHLY MODERATELY SOMEWHAT NOT
11.7	Is able to abandon outmoded assumptions and beliefs to experiment with some alternative concepts and ideas.	DAILY WEEKLY MONTHLY YEARLY NEVER	EXTREMELY HIGHLY MODERATELY SOMEWHAT NOT

	Effectiveness	**Yes or No**		**Level of effectiveness**
12.1	Overall, do you consider the person you are rating to be effective in their job role?	Yes	No	EXTREMELY HIGHLY MODERATELY SOMEWHAT NOT
12.2	Is the person you are rating effective in linking the needs of people, teams, and the organization.	Yes	No	EXTREMELY HIGHLY MODERATELY SOMEWHAT NOT

Additional Comments:

APPENDIX D

ITEM MAPS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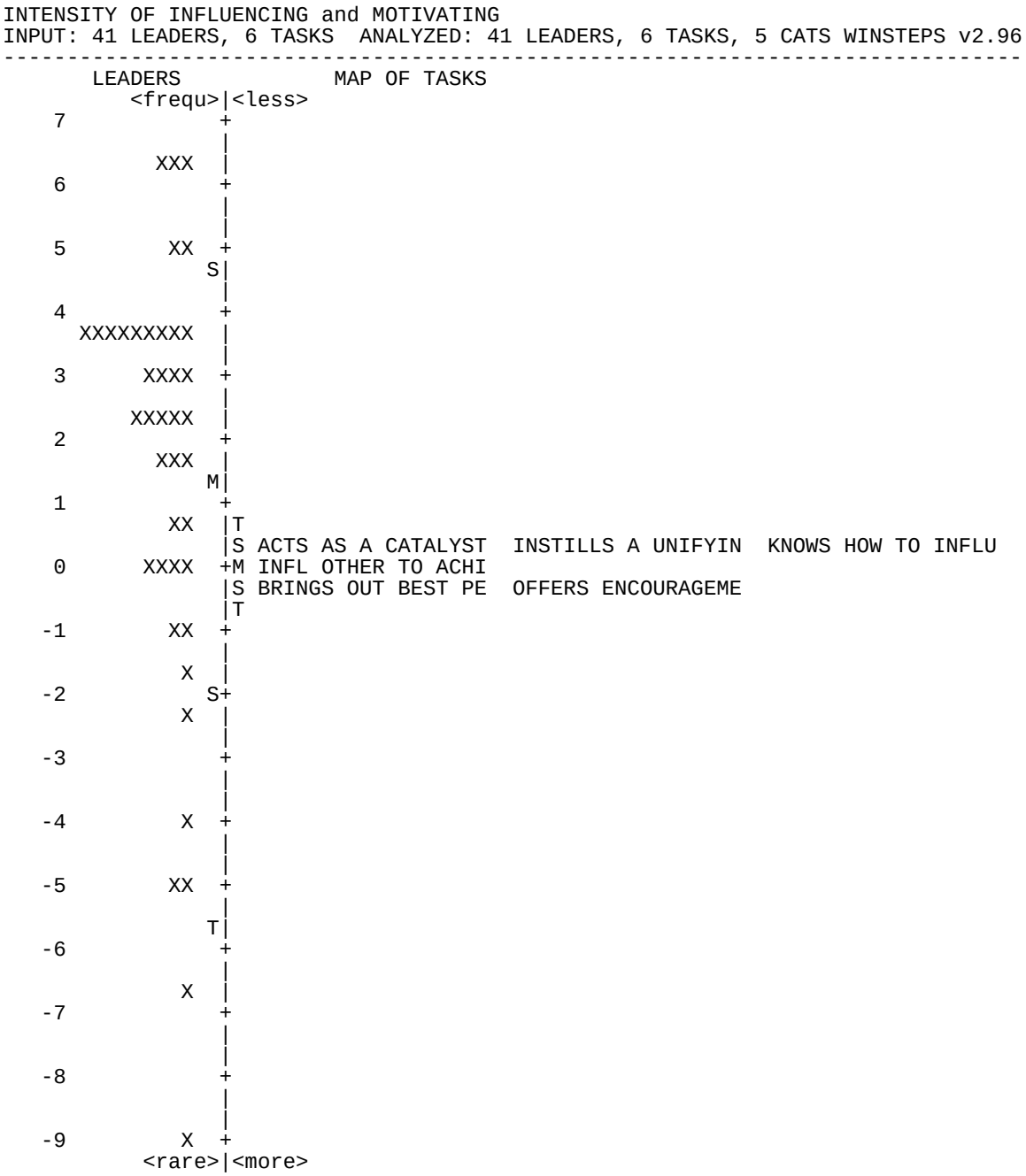
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LEADERS MAP OF TASKS
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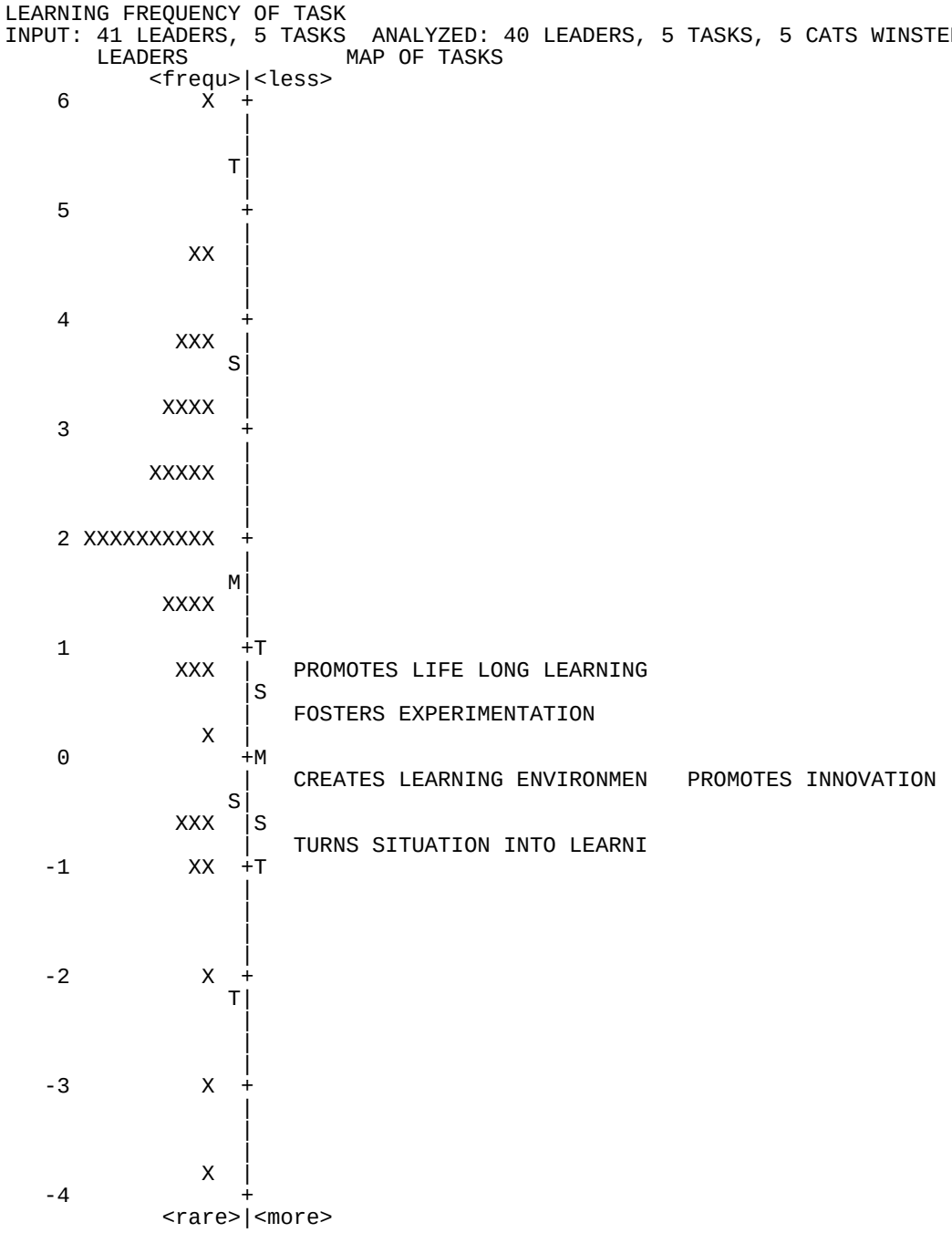
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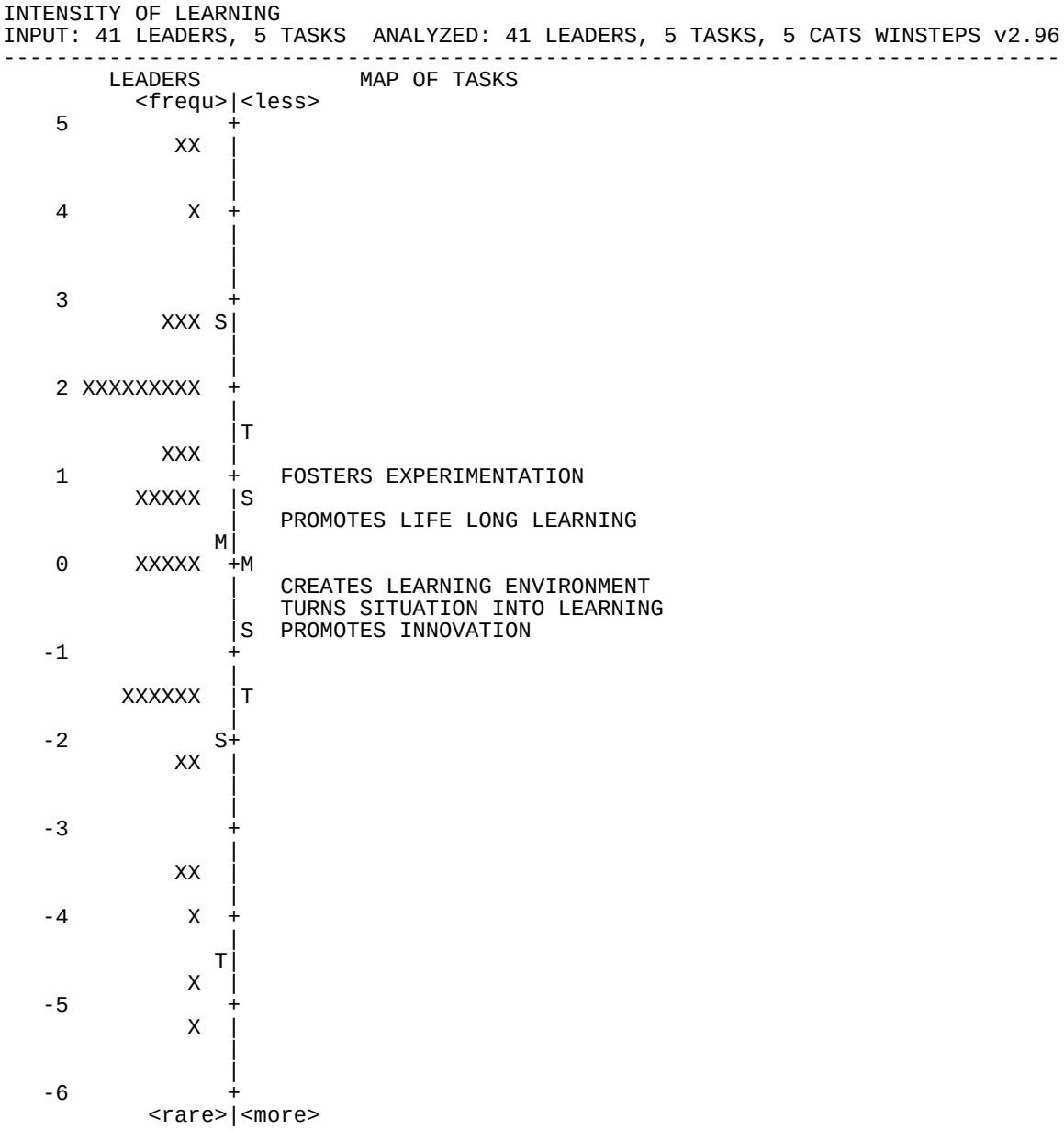
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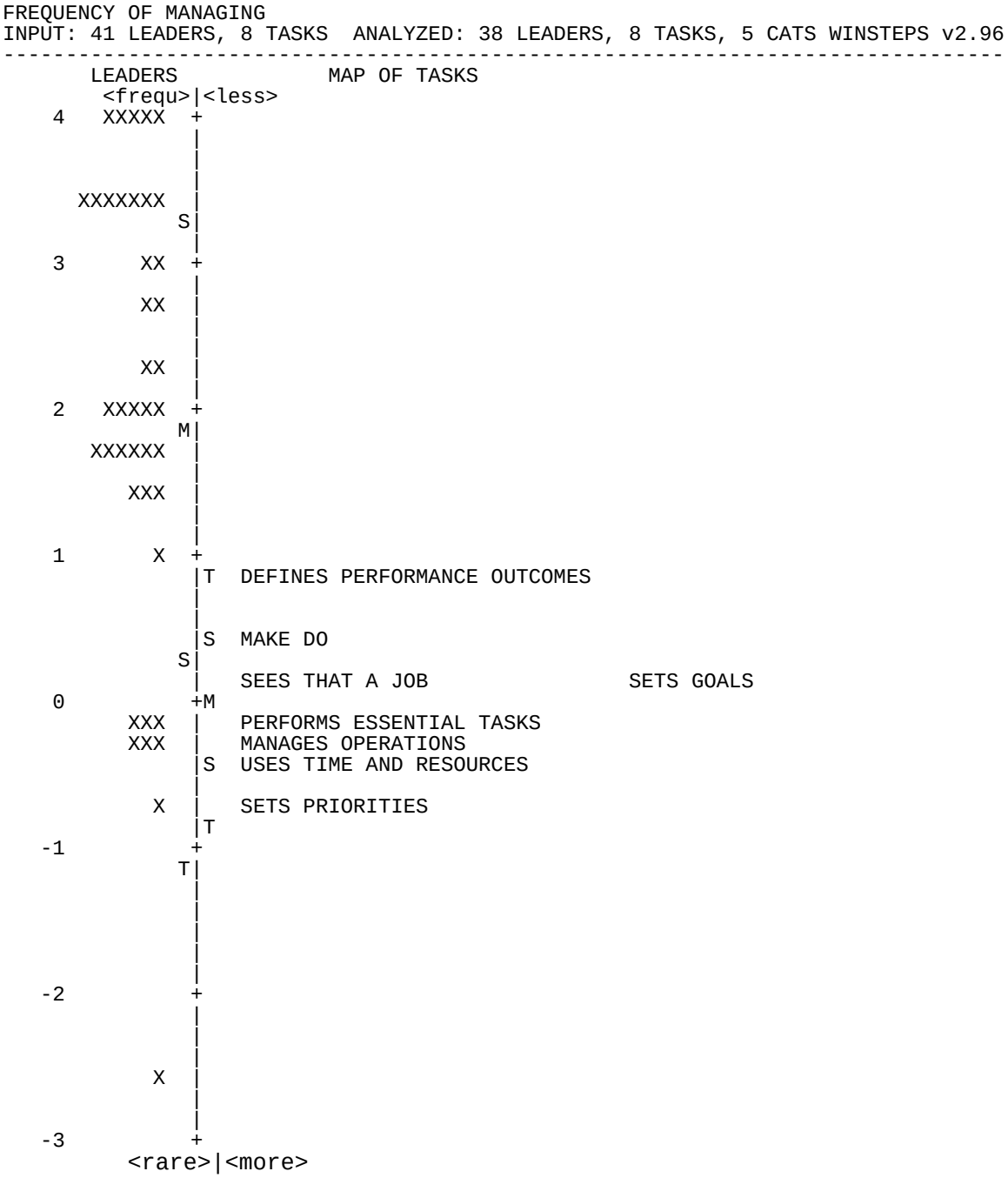
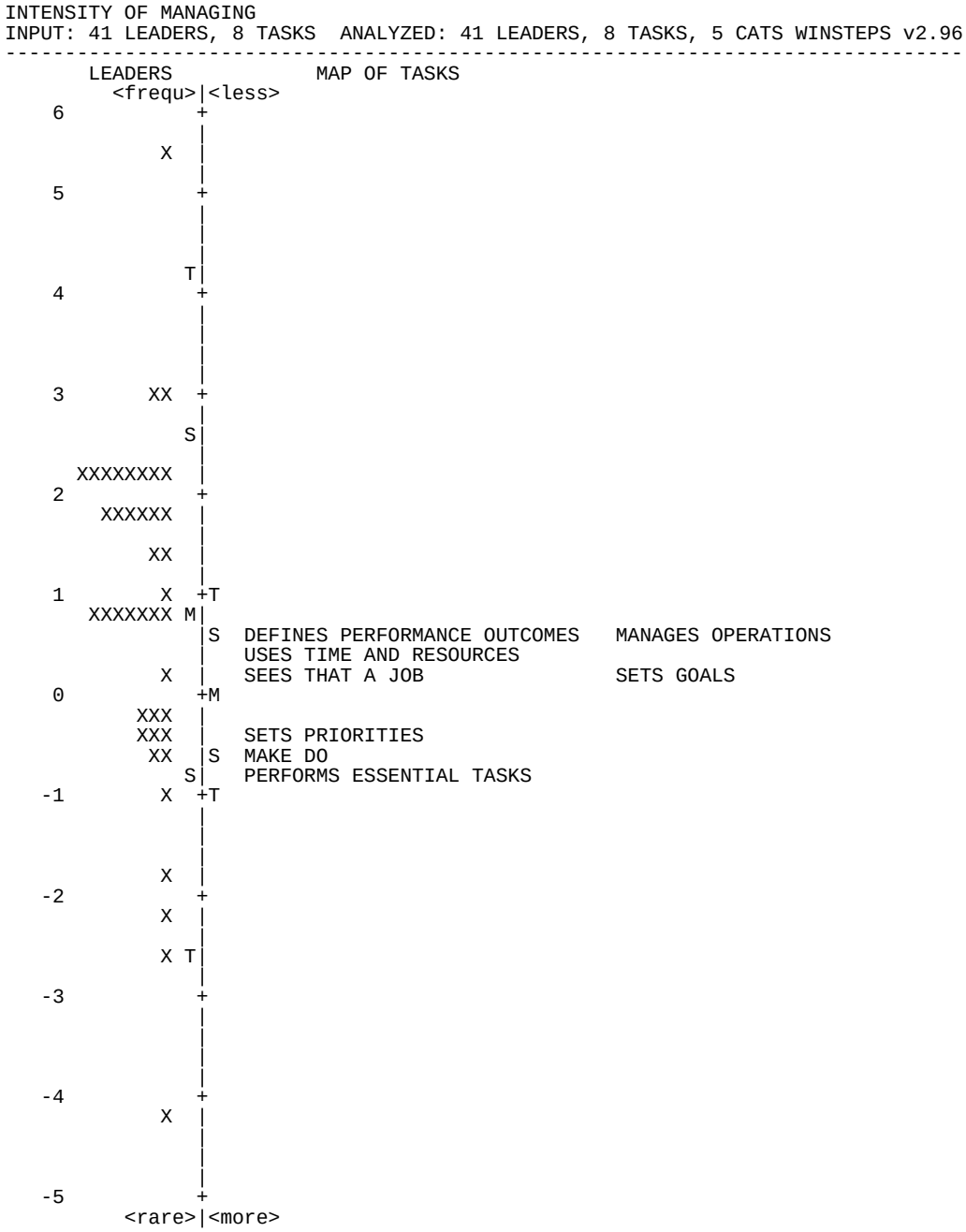
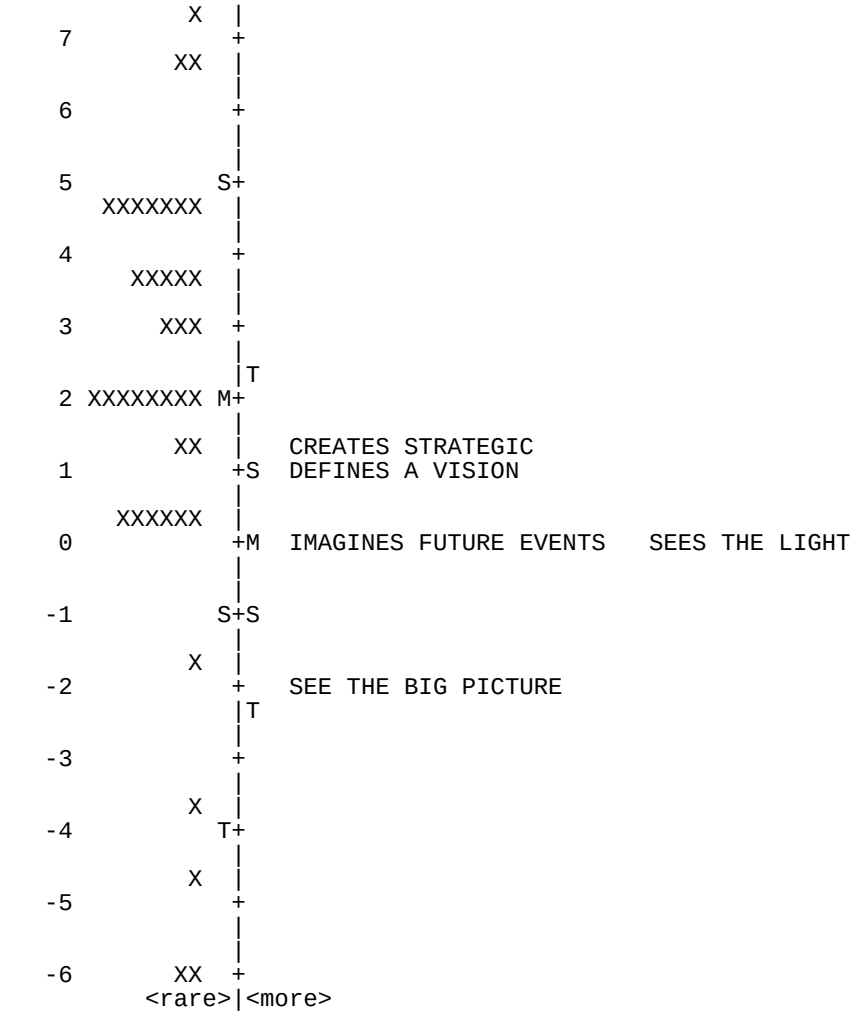
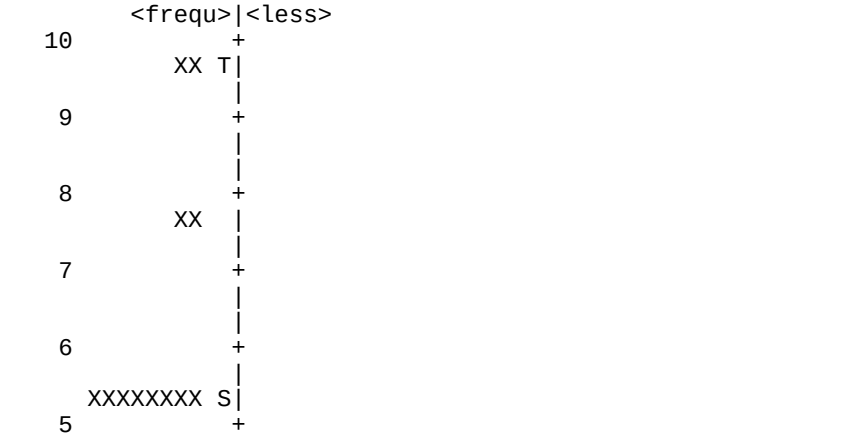
X
T
S
M
T
S
FOSTERS EXPERIMENTATION
PROMOTES LIFE LONG LEARNING
CREATES LEARNING ENVIRONMENT
TURNS SITUATION INTO LEARNING
PROMOTES INNOVATION
<rare>|<more>

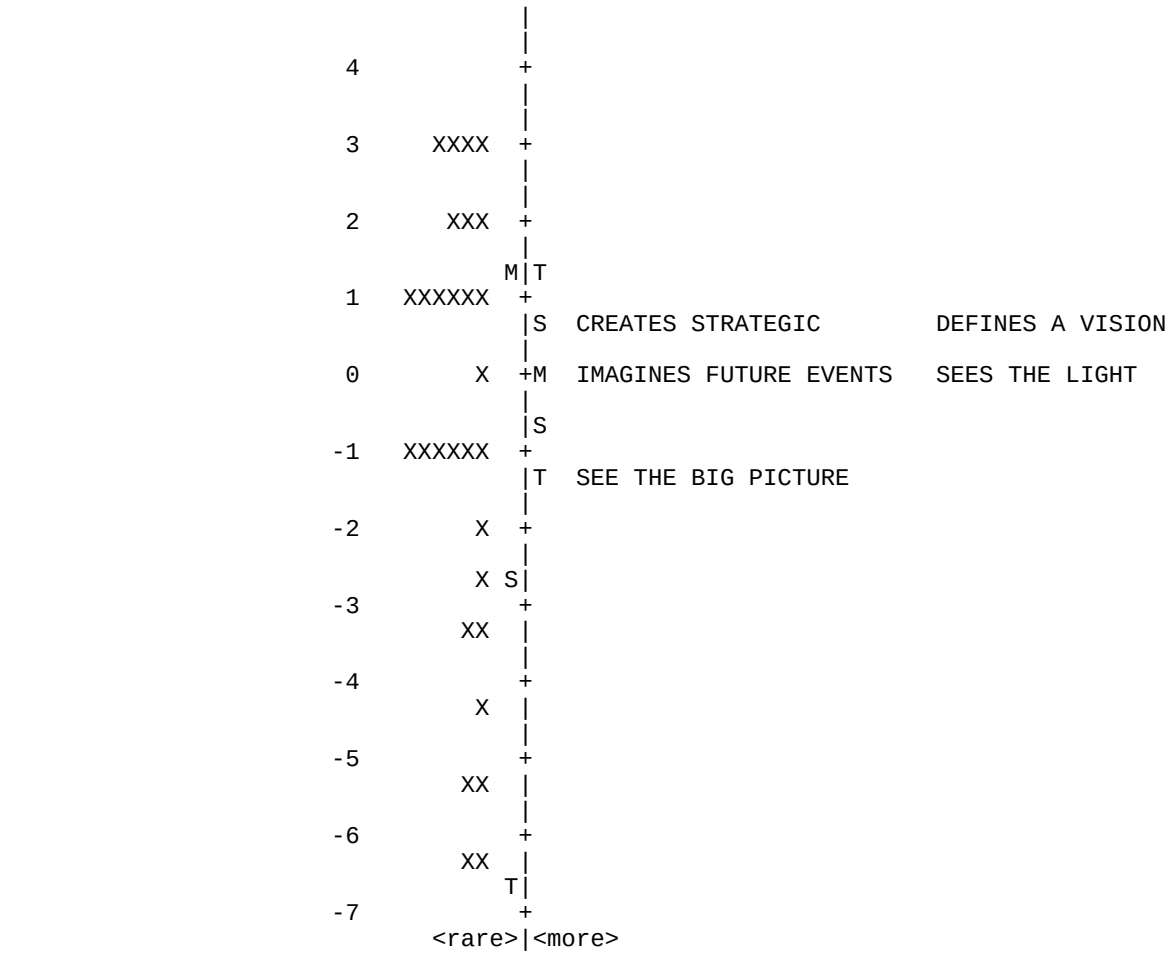

FREQUENCY OF MANAGING
INPUT: 41 LEADERS, 8 TASKS ANALYZED: 38 LEADERS, 8 TASKS, 5 CATS WINSTEPS v2.96
LEADERS
<frequ>|<less>
MAP OF TASKS
4 XXXXX +
XXXXXXX S|
3 XX +
XX
XX
2 XXXXX +
M|
XXXXXX
XXX
1 X +
T DEFINES PERFORMANCE OUTCOMES
S MAKE DO
SEES THAT A JOB SETS GOALS
0 +M
XXX PERFORMS ESSENTIAL TASKS
XXX MANAGES OPERATIONS
S USES TIME AND RESOURCES
X SETS PRIORITIES
T
-1 +
T|
-2 +
X
-3 +
<rare>|<more>


INTENSITY OF MANAGING
INPUT: 41 LEADERS, 8 TASKS ANALYZED: 41 LEADERS, 8 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
6
X
5
T
4
3 XX
S
XXXXXXXX
2
XXXXXX
XX
1 X
XXXXXXX M
S DEFINES PERFORMANCE OUTCOMES MANAGES OPERATIONS
USES TIME AND RESOURCES
X SEES THAT A JOB SETS GOALS
0 M
XXX
XXX SETS PRIORITIES
XX S MAKE DO
S PERFORMS ESSENTIAL TASKS
-1 X T
X
X
-2
X
X T
-3
-4
X
-5
<rare>|<more>
FREQEUNCY OF ENVISIONING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 39 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
9 XX
T
8

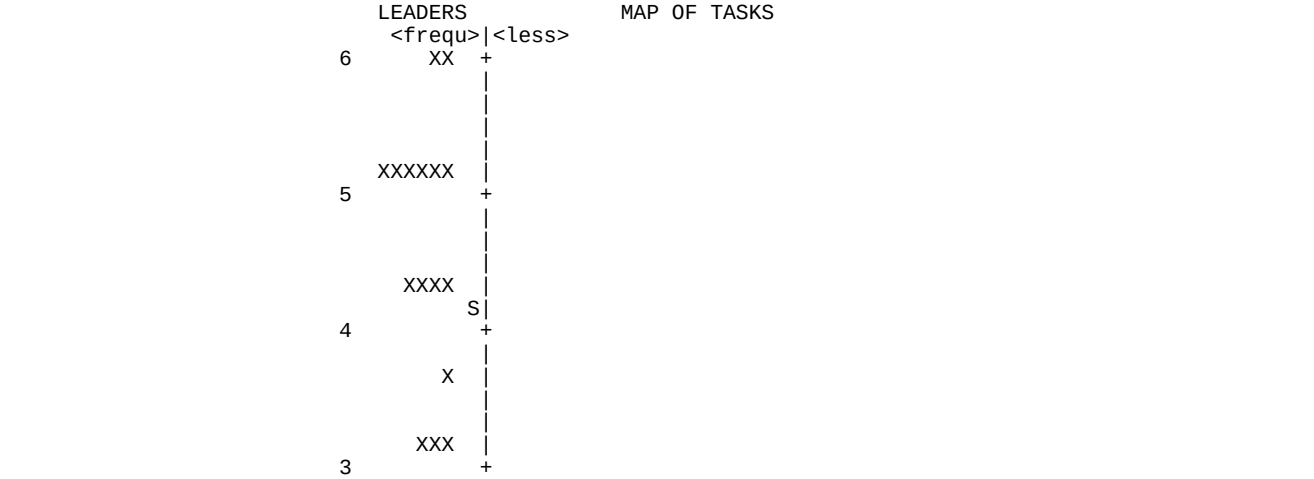


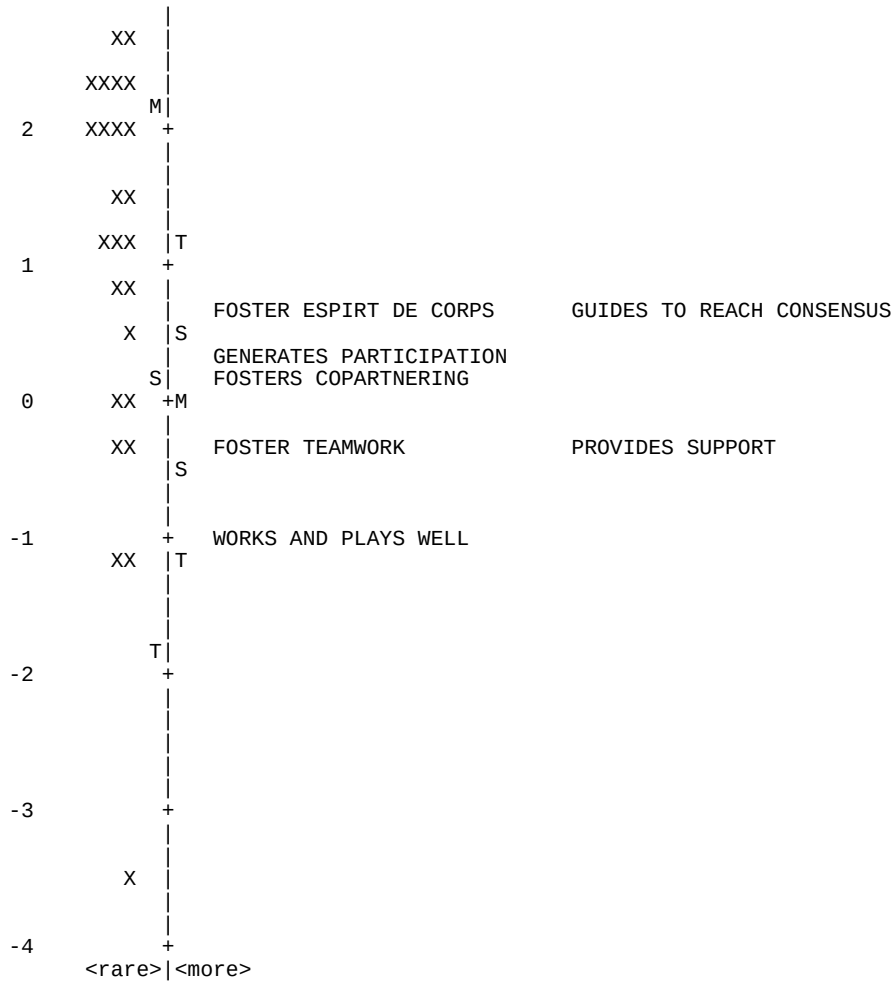
INTENSITY OF ENVISIONING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 41 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96



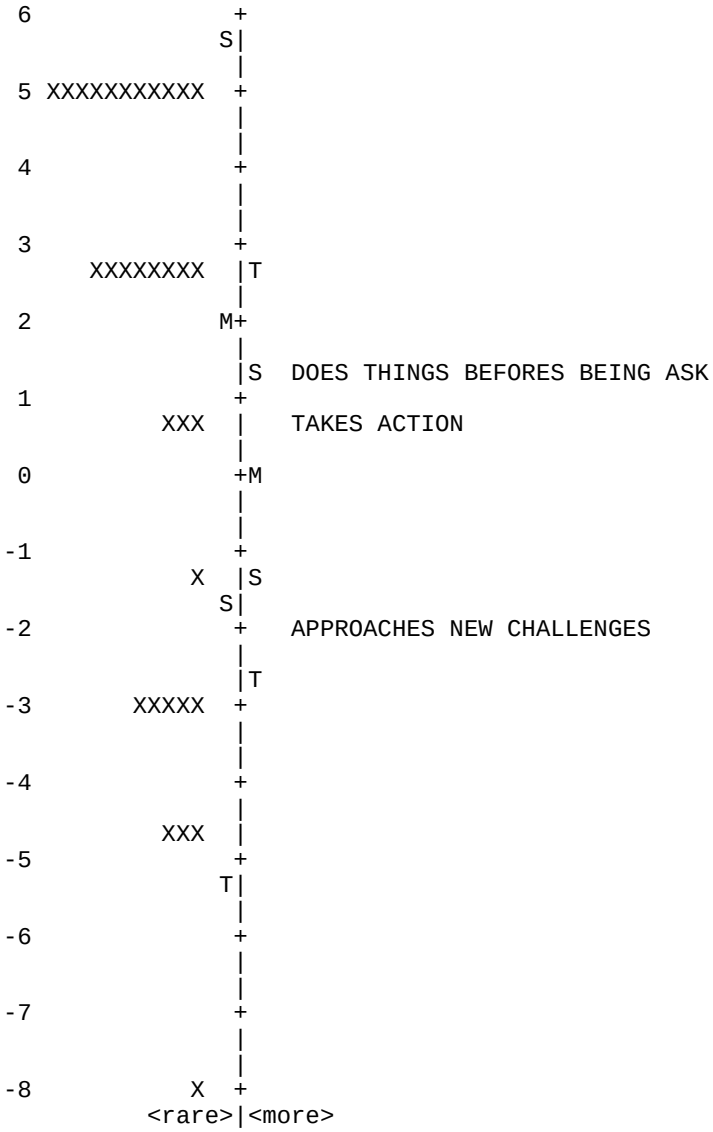


FREQUENCY OF TEAMING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 39 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96

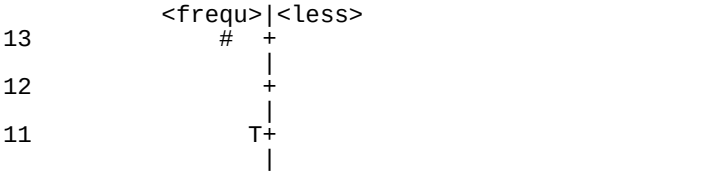


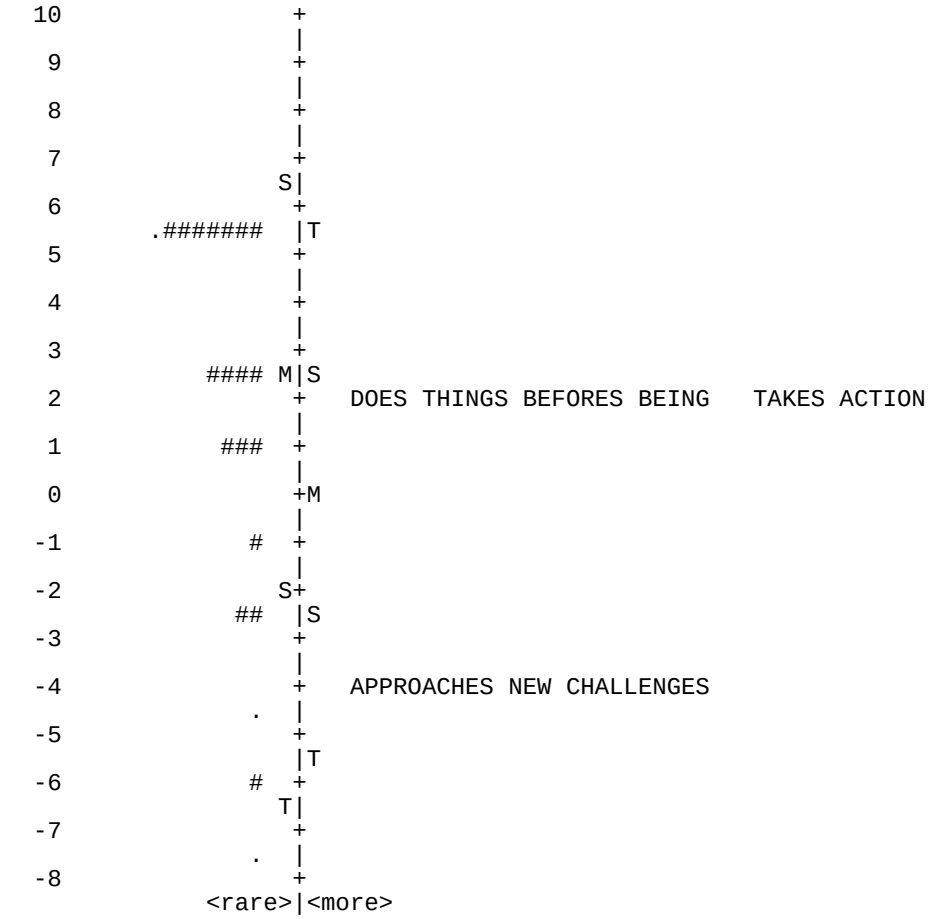

XX
XXXX
M
2
XXXX
XX
XXX
T
1
XX
FOSTER ESPIRT DE CORPS
GUIDES TO REACH CONSENSUS
X
S
GENERATES PARTICIPATION
S
FOSTERS COPARTNERING
0
XX
M
XX
FOSTER TEAMWORK
PROVIDES SUPPORT
S
-1
WORKS AND PLAYS WELL
XX
T
T
-2
-3
X
-4
<rare>
<more>

```
INTENSITY OF TEAMING
INPUT: 41 LEADERS, 7 TASKS  ANALYZED: 41 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96
------------------------------------------------------------------------------
       LEADERS            MAP OF TASKS
         <frequ>|<less>
    6           +
                |
                |
          XXX   |
    5           +
            X   |
                |
                |
    4         X S+
                |
      XXXXXXXX  |
                |
    3           +
        XXXXXX  |
                |
                |
    2         X  +
                |
          XXX M|
                |
    1       XX  +T
          XXX   |
                |S  GUIDES TO RE
         XXXX   |   FOSTER ESPIR   FOSTER TEAMW   FOSTERS COPA   GENERATES PA
    0           +M
           XX   |
                |S  PROVIDES SUP
            X   |   WORKS AND PL
   -1         X  +T
              S|
                |
                |
   -2           +
                |
            X   |
                |
   -3           +
                |
            X   |
                |
   -4         X T+
                |
                |
   -5         X  +
                |
                |
   -6           +
            X   |
                |
   -7           +
          <rare>|<more>
FREQUENCY OF INITIATING
INPUT: 41 LEADERS, 3 TASKS  ANALYZED: 34 LEADERS, 3 TASKS, 4 CATS WINSTEPS v2.96
------------------------------------------------------------------------------
       LEADERS            MAP OF TASKS
            <frequ>|<less>
    8      XXXXXX  +
                   |
                   |
    7          XXX  +
                   |
                   |
```

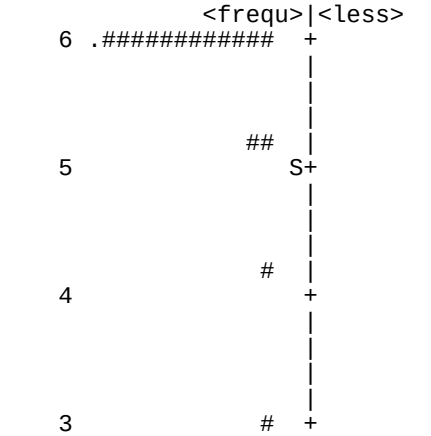


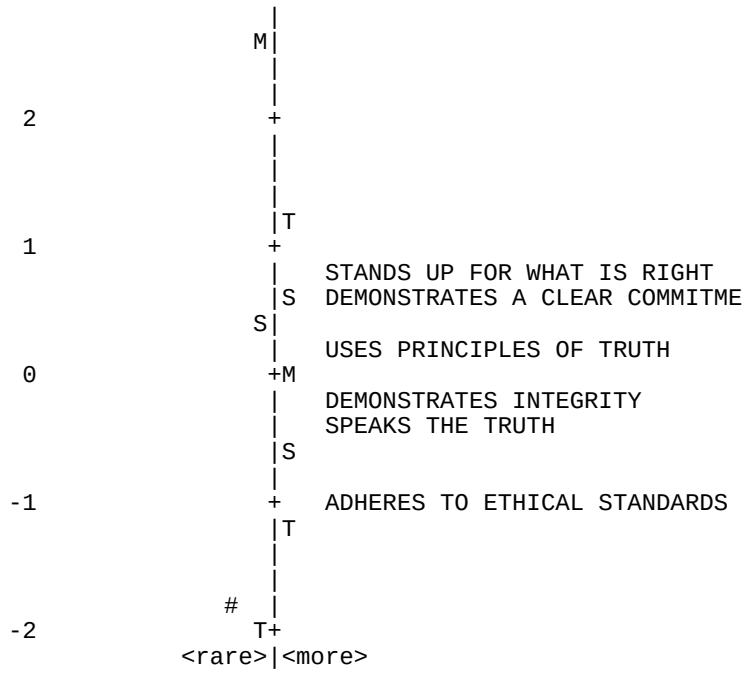
INTENSITY OF INITIATING
INPUT: 41 LEADERS, 3 TASKS ANALYZED: 41 LEADERS, 3 TASKS, 5 CATS WINSTEPS v2.96

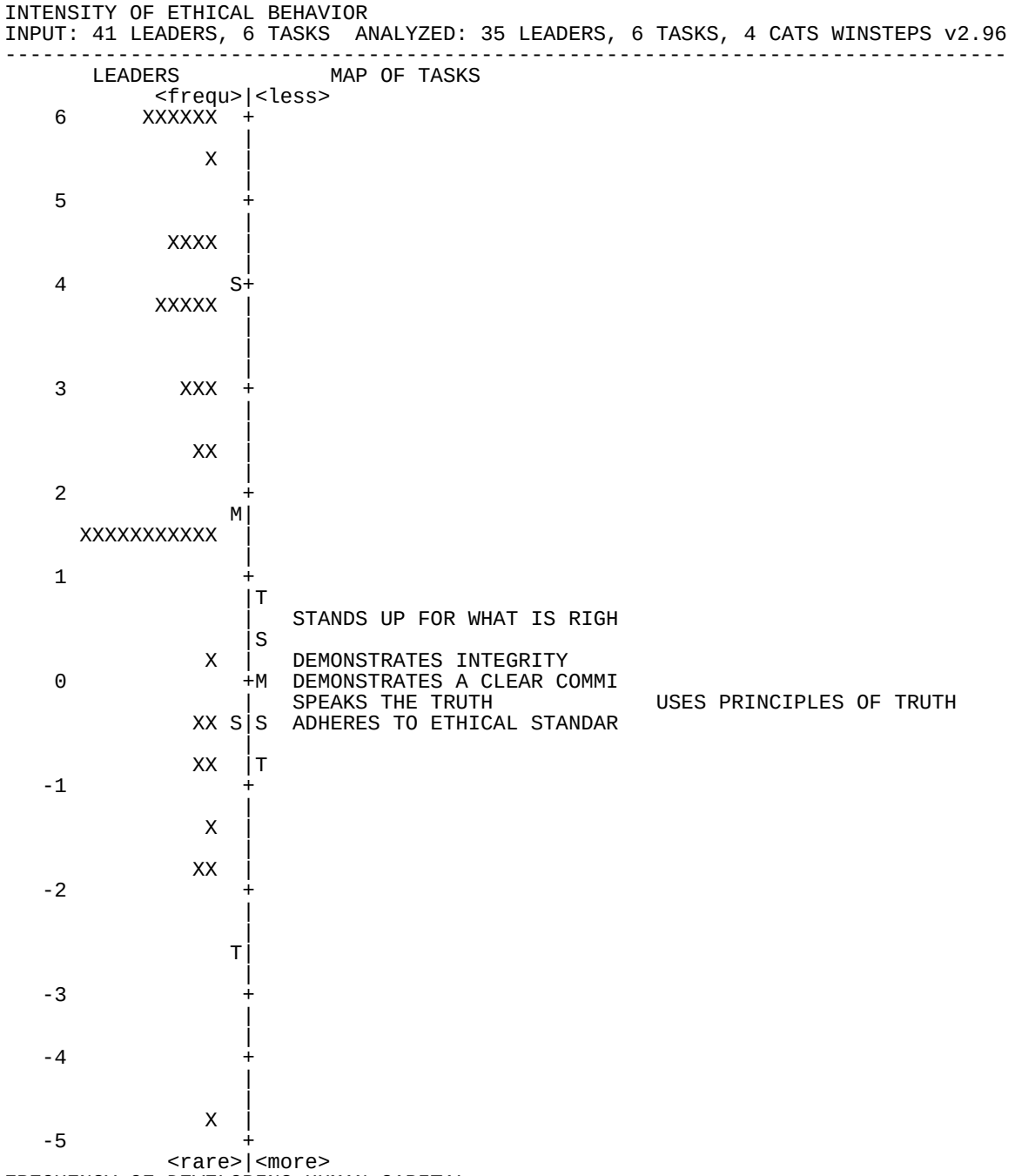


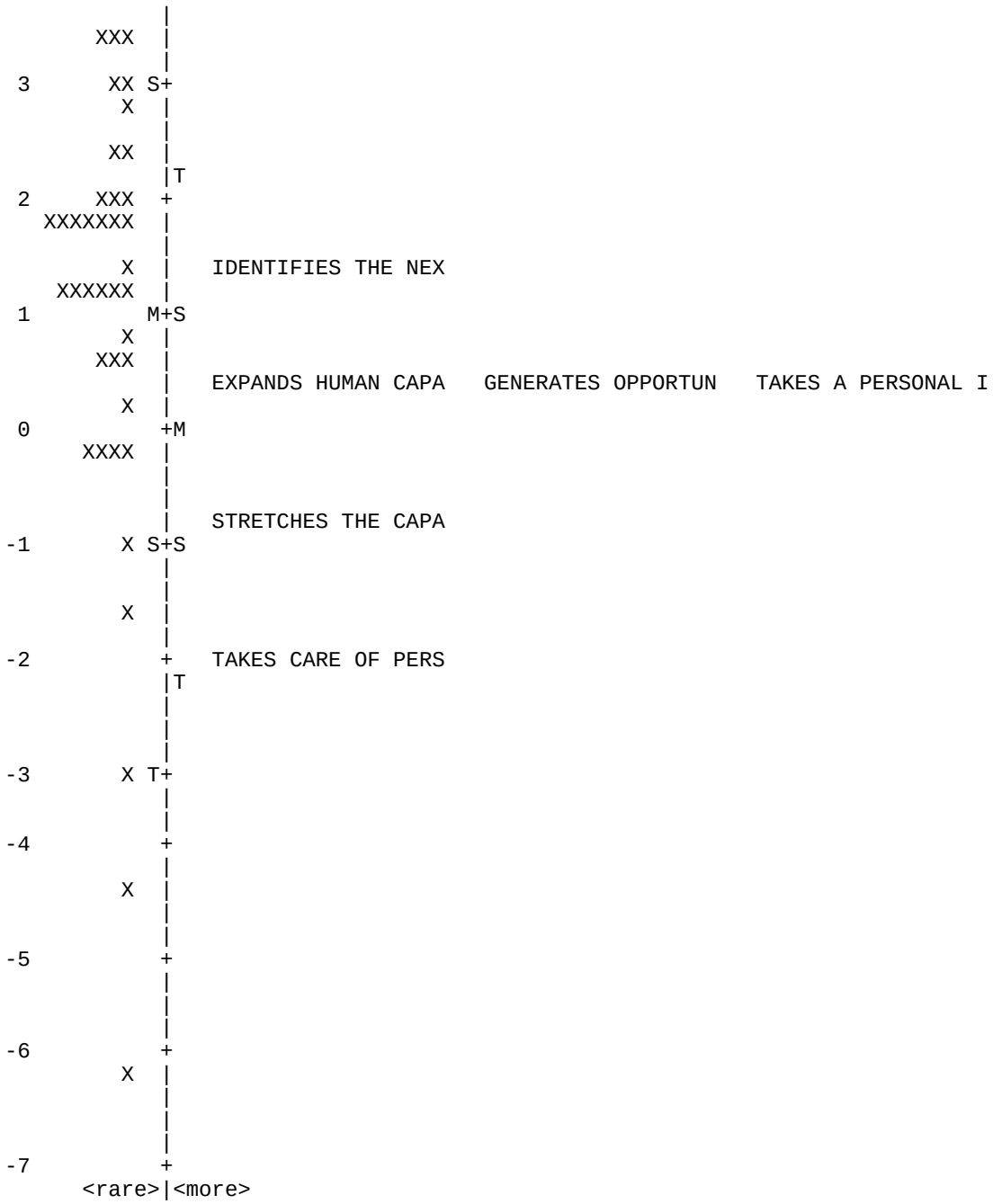


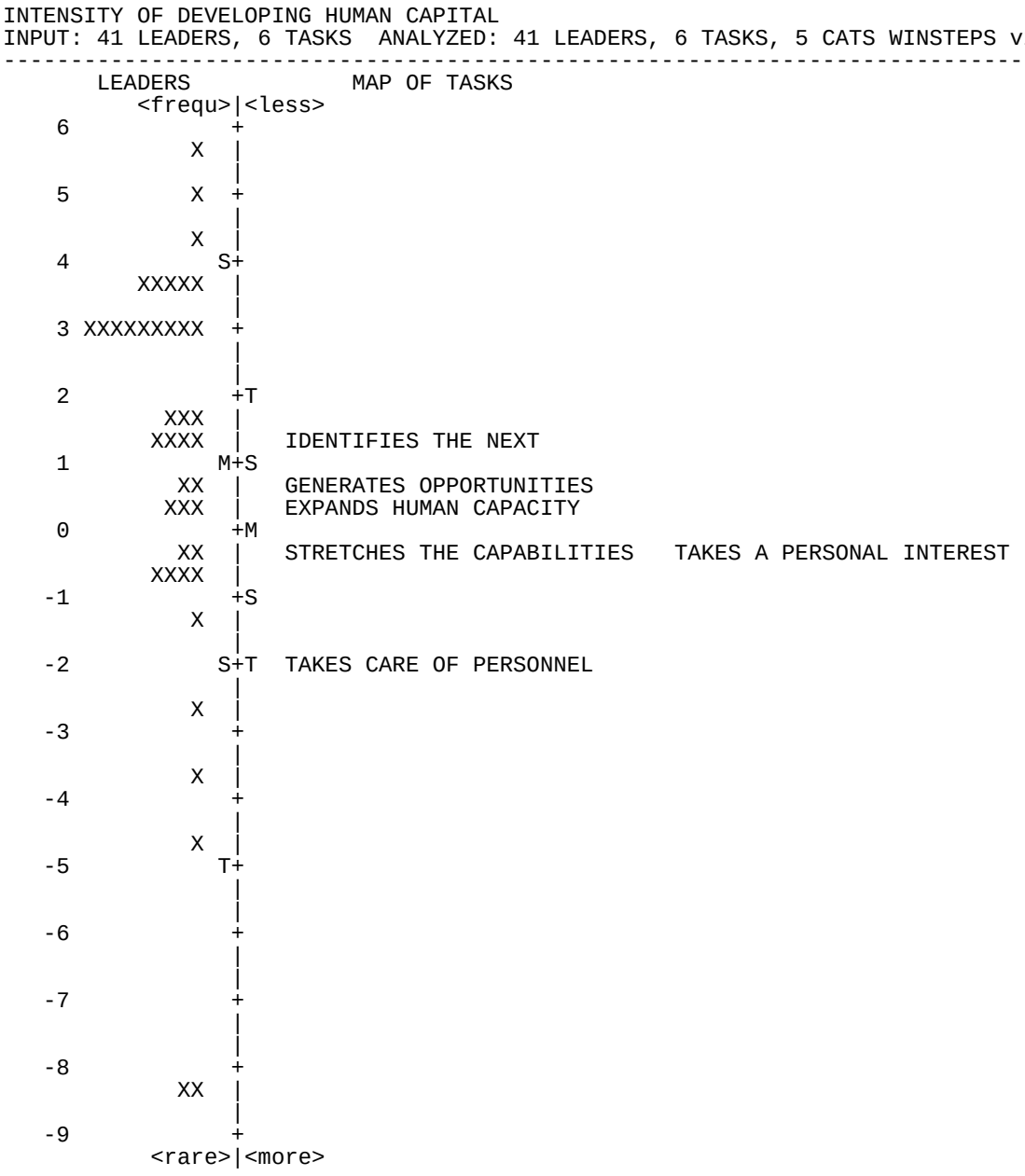
FREQUENCY OF ETHICAL BEHAVIOR
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 16 LEADERS, 6 TASKS, 4 CATS WINSTEPS v2.96

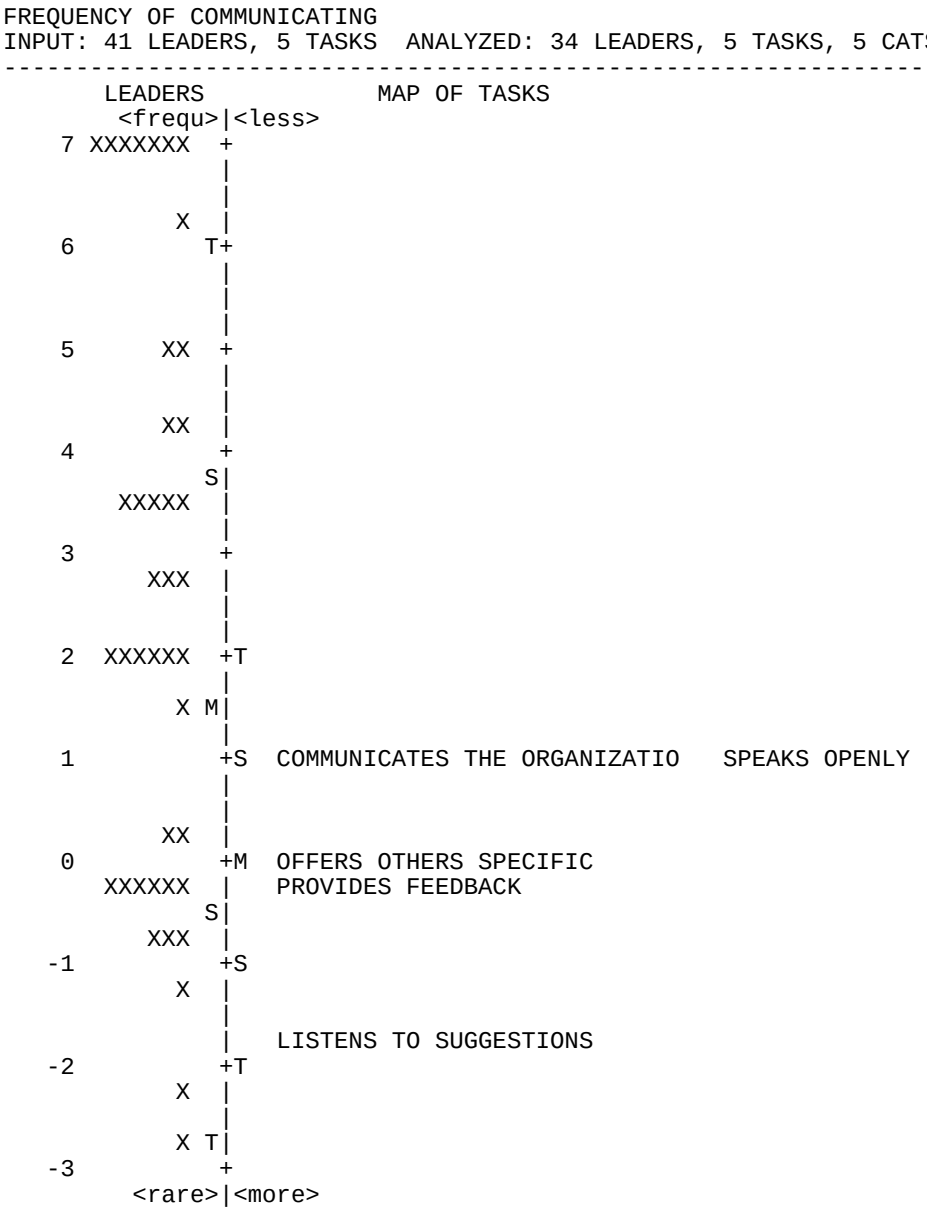


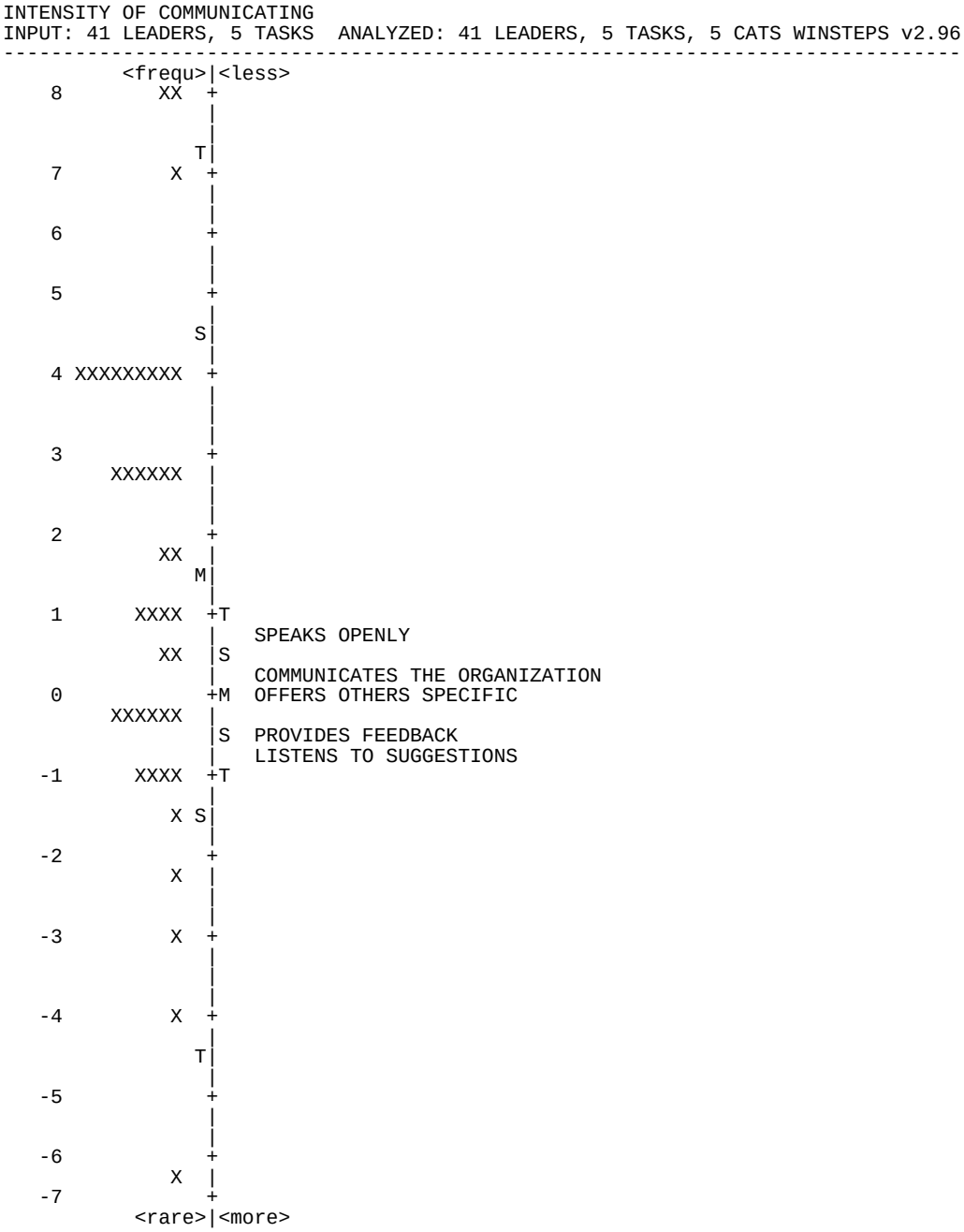

M
2
1
STANDS UP FOR WHAT IS RIGHT
S
DEMONSTRATES A CLEAR COMMITME
USES PRINCIPLES OF TRUTH
0
M
DEMONSTRATES INTEGRITY
SPEAKS THE TRUTH
S
-1
ADHERES TO ETHICAL STANDARDS
T
#
-2
T
<rare>
<more>

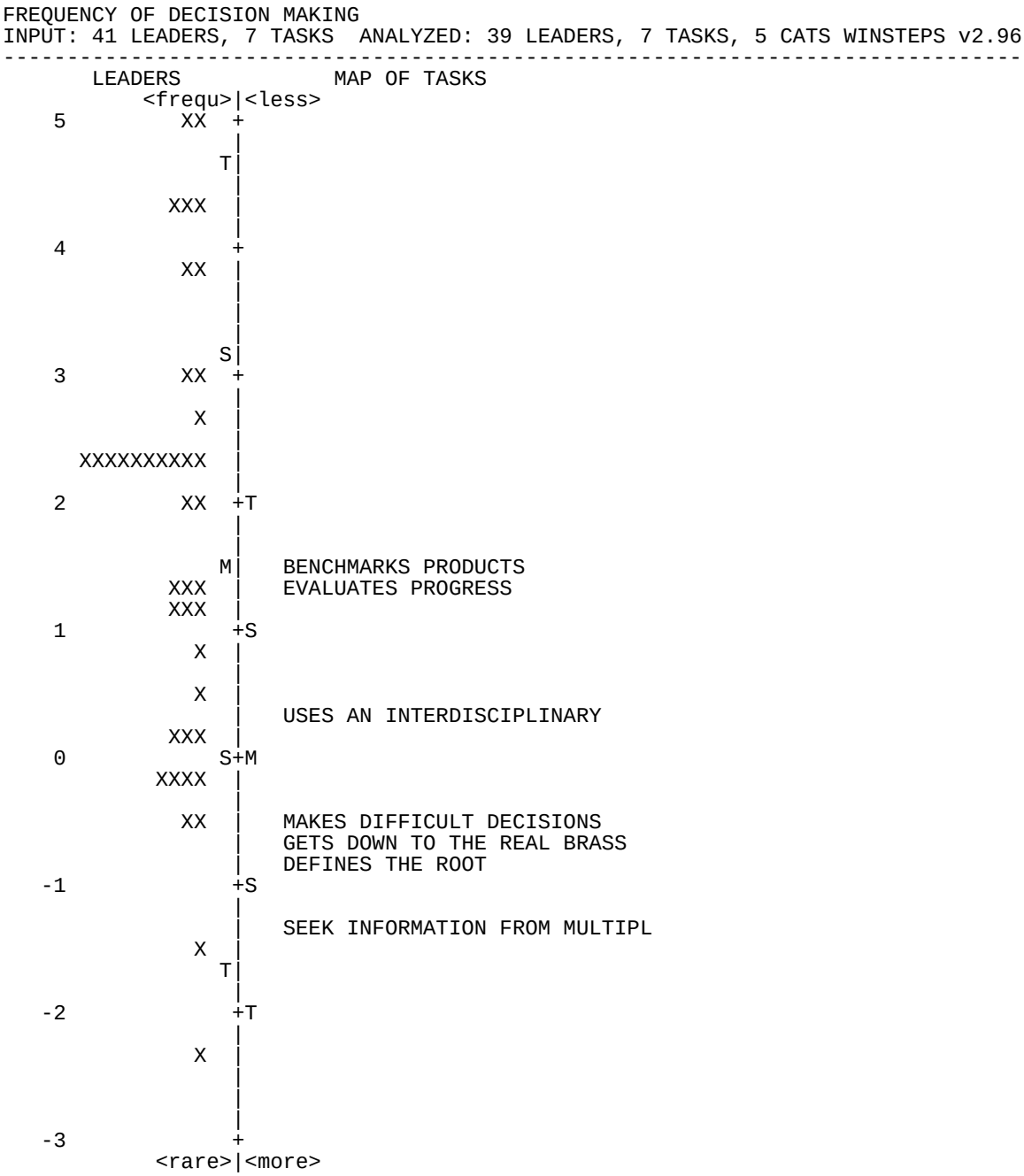

INTENSITY OF ETHICAL BEHAVIOR
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 35 LEADERS, 6 TASKS, 4 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
6 XXXXXX +
X |
5 +
XXXX |
4 S+
XXXXX |
3 XXX +
XX |
2 +
M|
XXXXXXXXXXX |
1 +
|T
| STANDS UP FOR WHAT IS RIGH
|S
X | DEMONSTRATES INTEGRITY
0 +M DEMONSTRATES A CLEAR COMMI
| SPEAKS THE TRUTH USES PRINCIPLES OF TRUTH
XX S|S ADHERES TO ETHICAL STANDAR
|
XX |T
-1 +
X |
XX |
-2 +
T|
-3 +
-4 +
X |
-5 +
<rare>|<more>
FREQUENCY OF DEVELOPING HUMAN CAPITAL
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 40 LEADERS, 6 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
5 X T+
4 X +

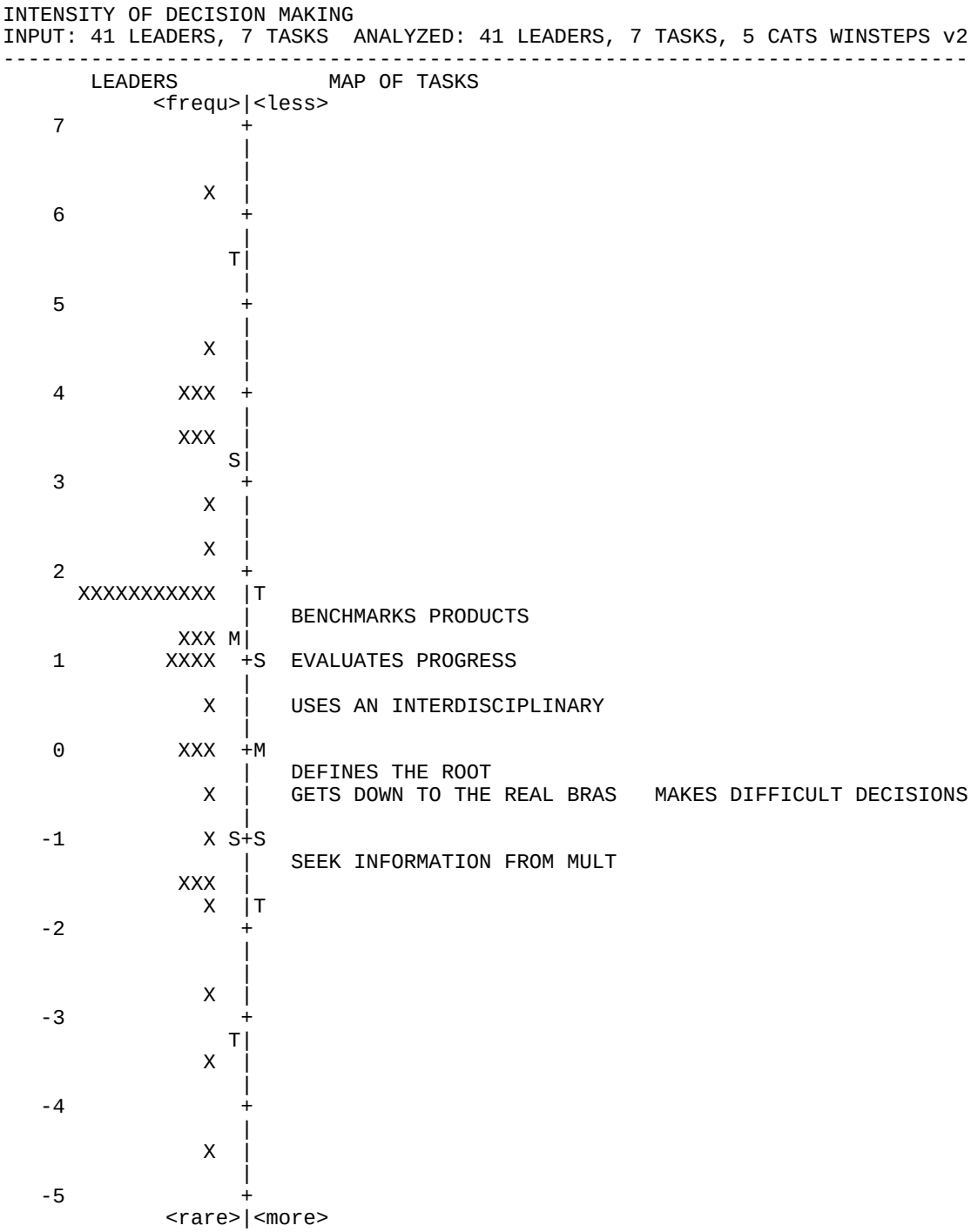

XXX
3 XX S+
X
XX
|T
2 XXX +
XXXXXXX
X
XXXXXX
1 M+S
X
XXX
X
0 +M
XXXX
X S+S
X
-2 + TAKES CARE OF PERS
|T
-3 X T+
-4 +
X
-5 +
-6 +
X
-7 +
<rare>|<more>
IDENTIFIES THE NEX
EXPANDS HUMAN CAPA GENERATES OPPORTUN TAKES A PERSONAL I
STRETCHES THE CAPA

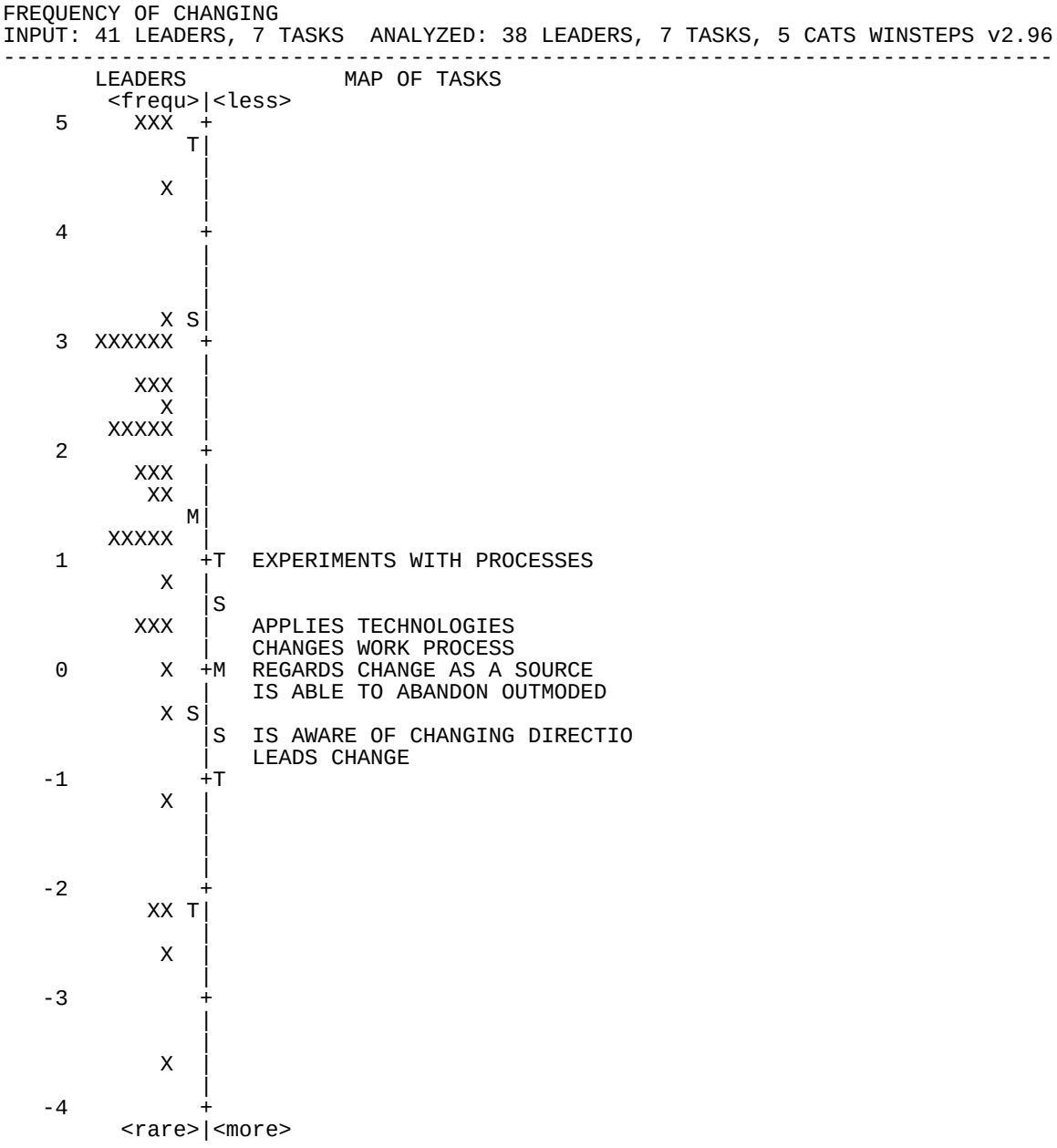

INTENSITY OF DEVELOPING HUMAN CAPITAL
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 41 LEADERS, 6 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
6
5
4
3 XXXXXXXXX
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
<rare>|<more>
IDENTIFIES THE NEXT
GENERATES OPPORTUNITIES
EXPANDS HUMAN CAPACITY
STRETCHES THE CAPABILITIES
TAKES A PERSONAL INTEREST
TAKES CARE OF PERSONNEL

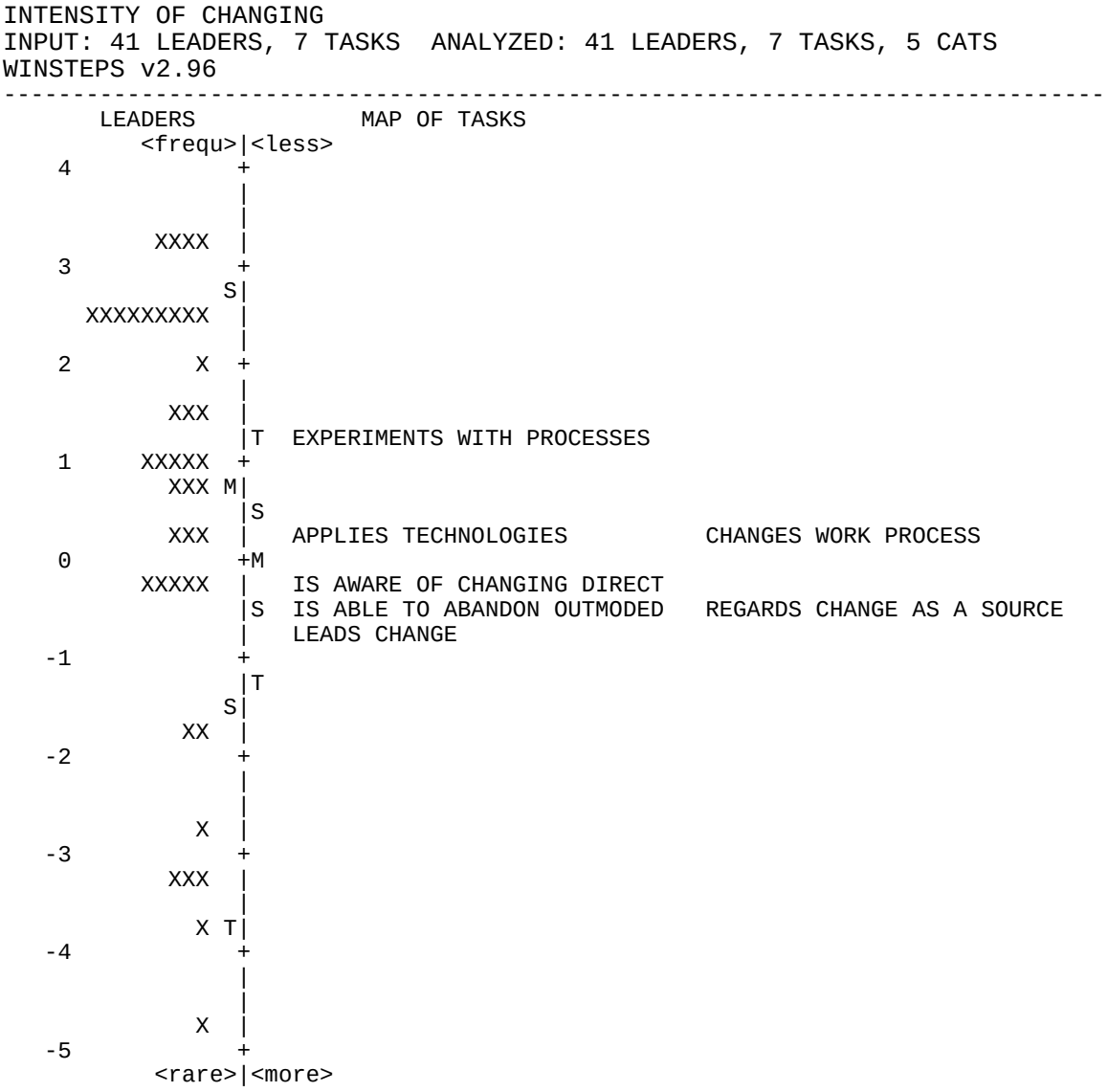

FREQUENCY OF COMMUNICATING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 34 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
7 XXXXXXX +
X |
6 T+
5 XX +
XX |
4 +
S|
XXXXX |
3 +
XXX |
2 XXXXXX +T
X M|
1 +S COMMUNICATES THE ORGANIZATIO SPEAKS OPENLY
XX |
0 +M OFFERS OTHERS SPECIFIC
XXXXXX | PROVIDES FEEDBACK
S|
XXX |
-1 +S
X |
| LISTENS TO SUGGESTIONS
-2 +T
X |
X T|
-3 +
<rare>|<more>


INTENSITY OF COMMUNICATING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 41 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96
<frequ>|<less>
8 XX
T
7 X
6
5
S
4 XXXXXXXXX
3 XXXXXX
2
XX
M
1 XXXX +T SPEAKS OPENLY
XX S COMMUNICATES THE ORGANIZATION
0 +M OFFERS OTHERS SPECIFIC
XXXXXX
S PROVIDES FEEDBACK
LISTENS TO SUGGESTIONS
-1 XXXX +T
X S
-2
X
-3 X
-4 X
T
-5
-6
X
-7
<rare>|<more>


FREQUENCY OF DECISION MAKING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 39 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
5 XX +
T|
XXX |
4 +
XX |
S|
3 XX +
X |
XXXXXXXXXX |
2 XX +T
M| BENCHMARKS PRODUCTS
XXX | EVALUATES PROGRESS
XXX |
1 +S
X |
X | USES AN INTERDISCIPLINARY
XXX |
0 S+M
XXXX |
XX | MAKES DIFFICULT DECISIONS
| GETS DOWN TO THE REAL BRASS
| DEFINES THE ROOT
-1 +S
| SEEK INFORMATION FROM MULTIPL
X |
T|
-2 +T
X |
-3 +
<rare>|<more>


INTENSITY OF DECISION MAKING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 41 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
<rare>|<more>
BENCHMARKS PRODUCTS
EVALUATES PROGRESS
USES AN INTERDISCIPLINARY
DEFINES THE ROOT
GETS DOWN TO THE REAL BRAS
MAKES DIFFICULT DECISIONS
SEEK INFORMATION FROM MULT


FREQUENCY OF CHANGING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 38 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
5 XXX +
T|
X |
4 +
X S|
3 XXXXXX +
XXX |
X |
XXXXX |
2 +
XXX |
XX |
M|
XXXXX |
1 +T EXPERIMENTS WITH PROCESSES
X |
|S
XXX | APPLIES TECHNOLOGIES
| CHANGES WORK PROCESS
0 X +M REGARDS CHANGE AS A SOURCE
| IS ABLE TO ABANDON OUTMODED
X S|
|S IS AWARE OF CHANGING DIRECTIO
| LEADS CHANGE
-1 +T
X |
-2 +
XX T|
X |
-3 +
X |
-4 +
<rare>|<more>


INTENSITY OF CHANGING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 41 LEADERS, 7 TASKS, 5 CATS
WINSTEPS v2.96
LEADERS MAP OF TASKS
<frequ>|<less>
4
3
2
1
0
-1
-2
-3
-4
-5
XXXX
XXXXXXXXX
X
XXX
XXXXX
XXX M
XXX
XXXXX
X
XX
X
XXX
X T
X
<rare>|<more>
T EXPERIMENTS WITH PROCESSES
APPLIES TECHNOLOGIES
CHANGES WORK PROCESS
IS AWARE OF CHANGING DIRECT
IS ABLE TO ABANDON OUTMODED
REGARDS CHANGE AS A SOURCE
LEADS CHANGE

APPENDIX E

LEADER ABILITY ESTIMATES

FREQUENCY OF INFLUENCING and MOTIVATING
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 36 LEADERS, 6 TASKS, 5 CATS WINSTEPS v2.96
LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
1	24	6	7.17	1.87	MAXIMUM ESTIMATED MEASURE					L5A
7	24	6	7.17	1.87	MAXIMUM ESTIMATED MEASURE					L3A
15	24	6	7.17	1.87	MAXIMUM ESTIMATED MEASURE					L3B
18	24	6	7.17	1.87	MAXIMUM ESTIMATED MEASURE					L14A
41	24	6	7.17	1.87	MAXIMUM ESTIMATED MEASURE					L7C
4	23	6	5.83	1.09	1.11	.1	1.26	.3	-.26	L2A
29	23	6	5.83	1.09	1.02	.0	.98	.0	.06	L9C
27	22	6	4.91	.86	.70	-.8	.65	-.9	.84	L3C
2	21	6	4.24	.79	.64	-1.1	.64	-1.1	.83	L7A
8	21	6	4.24	.79	.93	-.2	.92	-.2	.13	L7B
23	21	6	4.24	.79	.86	-.4	.88	-.3	.26	L3C
31	21	6	4.24	.79	1.85	1.8	1.79	1.7	.59	L14C
16	20	6	3.64	.77	1.06	.1	1.07	.1	-.59	L9B
19	20	6	3.64	.77	1.06	.1	1.07	.1	-.59	L13B
36	20	6	3.64	.77	.59	-1.0	.58	-1.0	.68	L14D
37	20	6	3.64	.77	.59	-1.0	.58	-1.0	.68	L14E
38	20	6	3.64	.77	.59	-1.0	.58	-1.0	.68	L14F
39	20	6	3.64	.77	.59	-1.0	.58	-1.0	.68	L14G
40	20	6	3.64	.77	.59	-1.0	.58	-1.0	.68	L14H
3	19	6	3.03	.79	1.50	.7	1.52	.7	.55	L5B
6	19	6	3.03	.79	2.13	1.4	2.10	1.4	-.62	L8A
9	19	6	3.03	.79	.48	-1.1	.47	-1.1	.26	L6A
28	19	6	3.03	.79	1.77	1.0	1.76	1.0	.04	L15C
30	19	6	3.03	.79	1.54	.8	1.56	.8	.48	L14B
34	19	6	3.03	.79	.48	-1.1	.47	-1.1	.26	L14C
12	18	6	2.41	.79	.04	-2.9	.04	-2.9	.00	L12A
25	18	6	2.41	.79	.04	-2.9	.04	-2.9	.00	L13C
33	18	6	2.41	.79	.04	-2.9	.04	-2.9	.00	L3C
5	17	6	1.79	.77	1.84	1.1	1.91	1.1	-.21	L9A
11	16	6	1.22	.74	.56	-.9	.55	-1.0	.59	L10A
20	16	6	1.22	.74	.97	-.1	.99	.0	-.51	L13C
21	16	6	1.22	.74	1.35	.6	1.41	.7	.91	L15B
22	16	6	1.22	.74	1.35	.6	1.41	.7	.91	L15C
26	16	6	1.22	.74	.84	-.3	.84	-.3	-.16	L2B
17	15	6	.69	.72	1.75	1.1	1.75	1.1	.18	L6C
10	14	6	.18	.70	.65	-.6	.66	-.6	.16	L6B
32	12	6	-.73	.64	.06	-2.5	.06	-2.5	.00	L5C
35	12	6	-.73	.64	.06	-2.5	.06	-2.5	.00	L15C
24	9	6	-1.71	.52	.23	-2.3	.24	-2.1	.67	L15B
13	7	6	-2.21	.49	3.18	3.5	3.16	3.4	-.42	L13A
14	1	6	-4.32	.95	.73	-.3	.62	-.3	.26	L15A
MEAN	17.	6.	2.32	.77	.94	-.4	.94	-.4		
S.D.	5.	0.	2.20	.11	.68	1.4	.68	1.4		

INTENSITY OF INFLUENCING and MOTIVATING
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 41 LEADERS, 6 TASKS, 5 CATS WINSTEPS v2.96
LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
1	19	6	6.18	1.00	2.69	1.7	2.72	1.6	.39	L5A
18	19	6	6.18	1.00	.90	-.1	.96	-.1	-.26	L14
23	19	6	6.18	1.00	.90	-.1	.96	-.1	-.26	L3C
16	18	6	4.94	1.20	.01	-2.1	.01	-2.1	.00	L9B
41	18	6	4.94	1.20	.01	-2.1	.01	-2.1	.00	L7C
3	17	6	3.70	.99	.78	-.3	.73	-.4	.26	L5B
9	17	6	3.70	.99	.78	-.3	.73	-.4	.26	L6A
28	17	6	3.70	.99	.78	-.3	.73	-.4	.26	L15
34	17	6	3.70	.99	.90	-.1	.98	.0	-.32	L14
36	17	6	3.70	.99	.87	-.2	.89	-.1	-.13	L14
37	17	6	3.70	.99	.87	-.2	.89	-.1	-.13	L14
38	17	6	3.70	.99	.87	-.2	.89	-.1	-.13	L14
39	17	6	3.70	.99	.87	-.2	.89	-.1	-.13	L14
40	17	6	3.70	.99	.87	-.2	.89	-.1	-.13	L14
4	16	6	2.88	.85	.78	-.6	.75	-.7	.72	L2A
7	16	6	2.88	.85	2.00	2.0	2.15	2.2	.95	L3A
19	16	6	2.88	.85	.86	-.4	.83	-.4	.42	L13
33	16	6	2.88	.85	.90	-.3	.90	-.3	.26	L3C
2	15	6	2.21	.80	1.03	.1	1.03	.1	-.14	L7A
8	15	6	2.21	.80	.82	-.7	.82	-.7	.58	L7B
11	15	6	2.21	.80	.74	-1.0	.73	-1.0	.87	L10
21	15	6	2.21	.80	.95	-.2	.94	-.2	.15	L15
22	15	6	2.21	.80	.95	-.2	.94	-.2	.15	L15
5	14	6	1.55	.83	.92	-.2	.92	-.2	.05	L9A
6	14	6	1.55	.83	1.04	.1	1.07	.2	-.41	L8A
31	14	6	1.55	.83	2.25	2.3	2.18	2.1	.13	L14
15	13	6	.80	.92	.70	-.5	.68	-.5	.13	L3B
17	13	6	.80	.92	2.18	1.3	2.27	1.3	.59	L6C
26	12	6	-.14	1.00	.01	-2.5	.01	-2.5	.00	L2B
29	12	6	-.14	1.00	.01	-2.5	.01	-2.5	.00	L9C
30	12	6	-.14	1.00	2.09	.9	2.08	.9	-.25	L14
32	12	6	-.14	1.00	.01	-2.5	.01	-2.5	.00	L5C
20	11	6	-1.07	.92	.86	-.2	.96	-.1	-.72	L13
25	11	6	-1.07	.92	.86	-.2	.96	-.1	-.72	L13
10	10	6	-1.82	.82	.73	-.7	.71	-.8	.72	L6B
35	9	6	-2.47	.80	1.10	.3	1.10	.3	-.44	L15
12	7	6	-3.91	.95	.82	-.3	.86	-.2	-.26	L12
24	6	6	-4.94	1.07	.01	-2.4	.01	-2.4	.00	L15
27	6	6	-4.94	1.07	.01	-2.4	.01	-2.4	.00	L3C
13	4	6	-6.77	.84	2.10	2.2	2.07	2.1	.65	L13
14	1	6	-9.06	1.10	1.07	.1	1.17	.2	-.26	L15
MEAN	14.	6.	1.32	.94	.92	-.3	.94	-.3		
S.D.	4.	0.	3.44	.10	.64	1.2	.64	1.2		

FREQUENCY OF LEARNING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 40 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96
LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEA
41	20	5	6.96	1.88	MAXIMUM ESTIMATED MEASURE					7C
18	18	5	4.61	.89	1.16	.3	1.27	.5	-.26	14A
31	18	5	4.61	.89	.77	-.5	.76	-.5	.47	14C
21	17	5	3.90	.81	2.24	1.8	2.22	1.8	-.01	15B
22	17	5	3.90	.81	2.24	1.8	2.22	1.8	-.01	15C
26	17	5	3.90	.81	1.40	.7	1.38	.7	-.91	2B
4	16	5	3.26	.79	.93	-.1	.92	-.1	-.76	2A
19	16	5	3.26	.79	.48	-1.1	.49	-1.1	.25	13B
28	16	5	3.26	.79	.51	-1.0	.52	-1.0	.19	15C
29	16	5	3.26	.79	.51	-1.0	.52	-1.0	.19	9C
2	15	5	2.64	.78	.10	-2.6	.10	-2.6	.00	7A
25	15	5	2.64	.78	.10	-2.6	.10	-2.6	.00	13C
30	15	5	2.64	.78	.87	-.2	.87	-.2	.64	14B
33	15	5	2.64	.78	.10	-2.6	.10	-2.6	.00	3C
34	15	5	2.64	.78	.10	-2.6	.10	-2.6	.00	14C
1	14	5	2.04	.78	5.80	3.9	5.74	3.9	.52	5A
7	14	5	2.04	.78	2.25	1.5	2.26	1.5	.70	3A
9	14	5	2.04	.78	.43	-1.2	.42	-1.2	.36	6A
15	14	5	2.04	.78	.25	-1.8	.25	-1.8	.76	3B
16	14	5	2.04	.78	.25	-1.8	.25	-1.8	.76	9B
36	14	5	2.04	.78	1.01	.0	1.01	.0	.95	14D
37	14	5	2.04	.78	1.01	.0	1.01	.0	.95	14E
38	14	5	2.04	.78	1.01	.0	1.01	.0	.95	14F
39	14	5	2.04	.78	1.01	.0	1.01	.0	.95	14G
40	14	5	2.04	.78	1.01	.0	1.01	.0	.95	14H
3	13	5	1.43	.78	.80	-.4	.80	-.4	.07	5B
5	13	5	1.43	.78	.34	-1.5	.35	-1.5	.91	9A
8	13	5	1.43	.78	.59	-.8	.58	-.8	.47	7B
23	13	5	1.43	.78	.34	-1.5	.35	-1.5	.91	3C
12	12	5	.80	.80	1.11	.2	1.14	.2	-.47	12A
13	12	5	.80	.80	5.26	3.6	5.69	3.7	.51	13A
20	12	5	.80	.80	.95	-.1	.94	-.1	-.14	13C
35	11	5	.15	.82	.78	-.3	.81	-.3	-.36	15C
6	10	5	-.51	.80	.09	-1.9	.08	-2.0	.00	8A
11	10	5	-.51	.80	.09	-1.9	.08	-2.0	.00	10A
32	10	5	-.51	.80	.09	-1.9	.08	-2.0	.00	5C
10	9	5	-1.09	.72	.66	-.5	.71	-.4	-.25	6B
27	9	5	-1.09	.72	.64	-.5	.66	-.5	-.19	3C
17	7	5	-1.97	.61	.24	-2.0	.26	-1.8	.70	6C
24	4	5	-3.02	.60	1.37	.7	1.41	.7	-.15	15B
14	2	5	-3.87	.74	.60	-.7	.72	-.4	.26	15A
MEAN	13.	5.	1.58	.78	.99	-.5	1.01	-.5		
S.D.	3.	0.	1.93	.05	1.19	1.5	1.22	1.5		

INTENSITY OF LEARNING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 41 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEA
7	17	5	4.79	.85	1.86	1.3	1.83	1.3	.53	3A
31	17	5	4.79	.85	.68	-.7	.70	-.6	.47	14C
28	16	5	4.08	.83	.93	-.1	.95	-.1	-.43	15C
9	14	5	2.71	.83	.28	-1.6	.26	-1.7	.73	6A
18	14	5	2.71	.83	.28	-1.6	.26	-1.7	.73	14A
30	14	5	2.71	.83	2.72	1.9	2.65	1.8	.51	14B
1	13	5	2.03	.82	5.68	4.0	5.84	4.0	.96	5A
3	13	5	2.03	.82	.95	-.1	.96	-.1	.02	5B
4	13	5	2.03	.82	1.29	.5	1.29	.5	-.47	2A
15	13	5	2.03	.82	.81	-.3	.81	-.3	.21	3B
21	13	5	2.03	.82	.88	-.2	.89	-.2	.12	15B
22	13	5	2.03	.82	.88	-.2	.89	-.2	.12	15C
23	13	5	2.03	.82	.30	-1.7	.30	-1.7	.94	3C
33	13	5	2.03	.82	.88	-.2	.89	-.2	.12	3C
34	13	5	2.03	.82	.30	-1.7	.30	-1.7	.94	14C
16	12	5	1.35	.83	.41	-1.3	.39	-1.3	.81	9B
19	12	5	1.35	.83	1.29	.5	1.33	.5	-.46	13B
25	12	5	1.35	.83	.89	-.2	.89	-.2	.13	13C
2	11	5	.64	.86	.95	-.1	1.01	.0	-.43	7A
8	11	5	.64	.86	.39	-1.2	.35	-1.3	.59	7B
20	11	5	.64	.86	2.01	1.2	2.15	1.3	.15	13C
26	11	5	.64	.86	.50	-.9	.46	-1.0	.41	2B
41	11	5	.64	.86	1.25	.4	1.27	.4	.92	7C
5	10	5	-.11	.87	1.03	.0	1.02	.0	.72	9A
6	10	5	-.11	.87	.12	-2.1	.11	-2.1	.00	8A
17	10	5	-.11	.87	1.03	.0	1.02	.0	.72	6C
29	10	5	-.11	.87	.12	-2.1	.11	-2.1	.00	9C
32	10	5	-.11	.87	.12	-2.1	.11	-2.1	.00	5C
11	8	5	-1.56	.81	1.30	.4	1.28	.4	-.47	10A
36	8	5	-1.56	.81	.28	-1.6	.27	-1.7	.94	14D
37	8	5	-1.56	.81	.28	-1.6	.27	-1.7	.94	14E
38	8	5	-1.56	.81	.28	-1.6	.27	-1.7	.94	14F
39	8	5	-1.56	.81	.28	-1.6	.27	-1.7	.94	14G
40	8	5	-1.56	.81	.28	-1.6	.27	-1.7	.94	14H
10	7	5	-2.19	.79	1.00	.0	.99	.0	-.12	6B
35	7	5	-2.19	.79	1.00	.0	.99	.0	-.12	15C
12	5	5	-3.39	.77	.16	-2.3	.16	-2.3	.00	12A
24	5	5	-3.39	.77	2.62	1.9	2.64	2.0	-.05	15B
27	4	5	-4.00	.79	1.97	1.3	1.98	1.3	-.06	3C
13	3	5	-4.64	.82	.30	-1.8	.32	-1.7	.94	13A
14	2	5	-5.37	.90	1.23	.4	1.51	.7	-.26	15A
MEAN	11.	5.	.30	.83	.97	-.4	.98	-.4		
S.D.	4.	0.	2.41	.03	.99	1.3	1.01	1.3		

FREQUENCY OF MANAGING
INPUT: 41 LEADERS, 8 TASKS ANALYZED: 38 LEADERS, 8 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
7	32	8	6.09	1.85	MAXIMUM ESTIMATED MEASURE					44L3
23	32	8	6.09	1.85	MAXIMUM ESTIMATED MEASURE					44L3
41	32	8	6.09	1.85	MAXIMUM ESTIMATED MEASURE					44L7
15	30	8	3.98	.79	.62	-.7	.51	-.9	.85	34L3
30	30	8	3.98	.79	.62	-.7	.51	-.9	.85	34L1
9	29	8	3.44	.68	.75	-.5	.74	-.5	.42	34L6
19	29	8	3.44	.68	1.39	.7	1.19	.4	.72	34L1
36	29	8	3.44	.68	1.02	.0	1.01	.0	-.13	43L1
37	29	8	3.44	.68	1.02	.0	1.01	.0	-.13	43L1
38	29	8	3.44	.68	1.02	.0	1.01	.0	-.13	43L1
39	29	8	3.44	.68	1.02	.0	1.01	.0	-.13	43L1
40	29	8	3.44	.68	1.02	.0	1.01	.0	-.13	43L1
2	28	8	3.01	.62	.54	-1.2	.56	-1.1	.68	33L7
28	28	8	3.01	.62	.88	-.3	.86	-.3	-.03	44L1
16	27	8	2.65	.59	.48	-1.4	.51	-1.3	.56	33L9
29	27	8	2.65	.59	.88	-.2	.84	-.4	.82	23L9
3	26	8	2.32	.56	.50	-1.3	.53	-1.2	.11	34L5
25	26	8	2.32	.56	.30	-2.0	.33	-1.9	.67	33L1
4	25	8	2.01	.54	.56	-1.0	.50	-1.3	-.70	43L2
6	25	8	2.01	.54	1.08	.2	1.02	.1	-.27	43L8
8	25	8	2.01	.54	1.31	.6	1.32	.6	.29	34L7
10	25	8	2.01	.54	.25	-2.2	.27	-2.2	.32	33L6
18	25	8	2.01	.54	1.35	.6	1.25	.5	.88	13L1
1	24	8	1.73	.52	3.49	3.0	3.32	2.9	.37	34L5
5	24	8	1.73	.52	.09	-3.2	.09	-3.3	.00	33L9
26	24	8	1.73	.52	.80	-.4	.78	-.5	.59	23L2
31	24	8	1.73	.52	1.85	1.4	1.94	1.5	.49	23L1
33	24	8	1.73	.52	.09	-3.2	.09	-3.3	.00	33L3
34	24	8	1.73	.52	.43	-1.5	.42	-1.5	.48	33L1
17	23	8	1.46	.51	2.47	2.1	2.28	1.9	.83	02L6
20	23	8	1.46	.51	.41	-1.5	.41	-1.5	.79	23L1
27	23	8	1.46	.51	1.75	1.2	1.73	1.2	.69	23L3
11	21	8	.97	.48	.68	-.7	.66	-.8	-.28	33L1
12	16	8	-.09	.45	.12	-3.3	.13	-3.2	.00	22L1
32	16	8	-.09	.45	.12	-3.3	.13	-3.2	.00	22L5
35	16	8	-.09	.45	.12	-3.3	.13	-3.2	.00	22L1
21	15	8	-.29	.45	2.93	2.8	2.93	2.8	-.22	12L1
22	15	8	-.29	.45	2.93	2.8	2.93	2.8	-.22	12L1
24	15	8	-.29	.45	.32	-2.0	.32	-2.1	.70	12L1
13	13	8	-.69	.45	1.10	.2	1.08	.2	.26	11L1
14	5	8	-2.55	.55	.61	-.9	.62	-.9	.12	01L1
MEAN	24.	8.	1.83	.56	.97	-.5	.95	-.5		
S.D.	6.	0.	1.48	.09	.81	1.7	.79	1.6		

INTENSITY OF MANAGING
INPUT: 41 LEADERS, 8 TASKS ANALYZED: 41 LEADERS, 8 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
7	30	8	5.50	.82	1.08	.2	1.20	.3	-.07	44L3
23	25	8	3.04	.68	.33	-1.6	.32	-1.7	.43	33L3
30	25	8	3.04	.68	1.17	.3	1.18	.3	.37	23L1
15	23	8	2.14	.65	.30	-1.7	.27	-1.8	.43	23L3

18	23	8	2.14	.65	1.03	.1	1.05	.1	.44	32L1
31	23	8	2.14	.65	2.79	2.1	2.72	2.0	.22	43L1
36	23	8	2.14	.65	.33	-1.6	.31	-1.6	.34	33L1
37	23	8	2.14	.65	.33	-1.6	.31	-1.6	.34	33L1
38	23	8	2.14	.65	.33	-1.6	.31	-1.6	.34	33L1
39	23	8	2.14	.65	.33	-1.6	.31	-1.6	.34	33L1
40	23	8	2.14	.65	.33	-1.6	.31	-1.6	.34	33L1
2	22	8	1.74	.62	1.03	.1	1.06	.1	.62	32L7
3	22	8	1.74	.62	.64	-.7	.67	-.7	.00	23L5
9	22	8	1.74	.62	.47	-1.2	.43	-1.3	.44	23L6
29	22	8	1.74	.62	1.54	.8	1.66	1.0	.82	22L9
33	22	8	1.74	.62	.49	-1.1	.45	-1.2	.40	22L3
34	22	8	1.74	.62	.49	-1.1	.45	-1.2	.40	22L1
8	21	8	1.37	.59	.60	-.9	.62	-.8	.27	23L7
16	21	8	1.37	.59	.65	-.8	.69	-.7	.16	23L9
28	20	8	1.04	.57	2.66	2.4	2.77	2.5	.60	23L1
1	19	8	.73	.55	4.44	4.2	4.80	4.4	-.64	23L5
4	19	8	.73	.55	.67	-.8	.67	-.8	.01	32L2
6	19	8	.73	.55	.50	-1.3	.50	-1.3	.36	32L8
10	19	8	.73	.55	1.24	.5	1.31	.6	.06	33L6
11	19	8	.73	.55	1.13	.3	1.12	.2	.20	33L1
19	19	8	.73	.55	.63	-.9	.64	-.9	.08	23L1
41	19	8	.73	.55	.93	-.1	.95	-.1	-.56	23L7
26	17	8	.16	.53	.23	-2.6	.25	-2.5	.37	22L2
5	16	8	-.12	.52	1.31	.7	1.31	.6	.51	31L9
25	16	8	-.12	.52	.12	-3.5	.12	-3.5	.00	22L1
32	16	8	-.12	.52	.12	-3.5	.12	-3.5	.00	22L5
17	15	8	-.39	.52	1.28	.6	1.30	.6	.77	02L6
20	15	8	-.39	.52	1.05	.1	1.04	.1	-.23	21L1
27	15	8	-.39	.52	.75	-.6	.76	-.6	.26	12L3
21	14	8	-.67	.53	1.97	1.7	1.91	1.6	.72	12L1
22	14	8	-.67	.53	1.97	1.7	1.91	1.6	.72	12L1
24	13	8	-.95	.54	.75	-.6	.74	-.6	.68	11L1
13	10	8	-1.88	.58	2.25	1.8	2.16	1.6	.38	11L1
35	9	8	-2.23	.60	.45	-1.3	.46	-1.3	-.14	11L1
12	8	8	-2.59	.61	.08	-3.1	.08	-3.1	.00	11L1
14	4	8	-4.20	.67	.54	-1.4	.55	-1.4	.82	00L1
MEAN	19.	8.	.82	.60	.96	-.5	.97	-.5		
S.D.	5.	0.	1.71	.06	.86	1.6	.90	1.6		

FREQEUNCY OF ENVISIONING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 39 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEA
7	20	5	10.01	1.90	MAXIMUM ESTIMATED MEASURE					3A
41	20	5	10.01	1.90	MAXIMUM ESTIMATED MEASURE					7C
1	18	5	7.47	.98	1.17	.4	1.01	.0	.27	5A
11	17	5	6.54	.96	1.86	1.2	2.33	1.5	-.39	10A
19	17	5	6.54	.96	.50	-1.1	.43	-1.1	.78	13B
3	15	5	4.65	.95	.29	-1.5	.25	-1.5	.00	5B
4	15	5	4.65	.95	.29	-1.5	.25	-1.5	.00	2A
10	15	5	4.65	.95	.29	-1.5	.25	-1.5	.00	6B
23	15	5	4.65	.95	.29	-1.5	.25	-1.5	.00	3C
25	15	5	4.65	.95	.29	-1.5	.25	-1.5	.00	13C
28	15	5	4.65	.95	.29	-1.5	.25	-1.5	.00	15C
29	15	5	4.65	.95	.78	-.3	.70	-.5	.91	9C
8	14	5	3.79	.90	.61	-.8	.57	-.9	.37	7B
9	14	5	3.79	.90	.61	-.8	.57	-.9	.37	6A
15	14	5	3.79	.90	.45	-1.3	.42	-1.3	.52	3B

16	14	5	3.79	.90	.45	-1.3	.42	-1.3	.52	9B
30	14	5	3.79	.90	.45	-1.3	.42	-1.3	.52	14B
5	13	5	2.99	.90	1.56	.9	1.76	1.1	-.32	9A
33	13	5	2.99	.90	.86	-.3	.81	-.4	.39	3C
34	13	5	2.99	.90	.45	-1.4	.42	-1.3	.73	14C
2	12	5	2.14	.95	.58	-.8	.51	-.9	.69	7A
20	12	5	2.14	.95	1.77	1.0	1.84	1.0	-.27	13C
26	12	5	2.14	.95	.58	-.8	.51	-.9	.69	2B
36	12	5	2.14	.95	1.37	.5	1.47	.6	.91	14D
37	12	5	2.14	.95	1.37	.5	1.47	.6	.91	14E
38	12	5	2.14	.95	1.37	.5	1.47	.6	.91	14F
39	12	5	2.14	.95	1.37	.5	1.47	.6	.91	14G
40	12	5	2.14	.95	1.37	.5	1.47	.6	.91	14H
6	11	5	1.18	1.01	1.71	.8	1.82	.8	.79	8A
18	11	5	1.18	1.01	3.08	1.7	2.74	1.4	.77	14A
12	10	5	.17	.99	1.31	.4	1.43	.5	.62	12A
21	10	5	.17	.99	.26	-1.5	.21	-1.5	.00	15B
22	10	5	.17	.99	.26	-1.5	.21	-1.5	.00	15C
31	10	5	.17	.99	5.78	3.3	5.30	2.8	.81	14C
32	10	5	.17	.99	.26	-1.5	.21	-1.5	.00	5C
35	10	5	.17	.99	.26	-1.5	.21	-1.5	.00	15C
27	8	5	-1.61	.92	.48	-1.3	.44	-1.3	.73	3C
24	6	5	-3.57	1.09	1.43	.5	1.30	.3	-.06	15B
13	5	5	-4.78	1.09	.21	-1.5	.16	-1.5	.00	13A
14	4	5	-5.87	1.00	.99	.0	.99	.0	.06	15A
17	4	5	-5.87	1.00	.52	-1.0	.45	-1.1	.52	6C
MEAN	12.	5.	2.05	.96	.97	-.4	.95	-.4		
S.D.	3.	0.	3.10	.04	1.00	1.2	.97	1.1		

INTENSITY OF ENVISIONING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 39 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEA
1	18	5	9.60	.96	.99	.0	.90	-.2	.34	5A
7	18	5	9.60	.96	.99	.0	.90	-.2	.34	3A
18	16	5	7.59	1.17	.50	-.9	.35	-1.0	.93	14A
28	16	5	7.59	1.17	.50	-.9	.35	-1.0	.93	15C
9	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	6A
11	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	10A
23	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	3C
36	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	14D
37	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	14E
38	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	14F
39	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	14G
40	15	5	5.21	1.98	.03	-1.1	.02	-1.1	.00	14H
4	14	5	2.93	1.13	.79	-.3	.61	-.5	.48	2A
19	14	5	2.93	1.13	1.11	.2	1.08	.1	.03	13B
25	14	5	2.93	1.13	1.47	.6	3.47	1.6	-.93	13C
29	14	5	2.93	1.13	.79	-.3	.61	-.5	.48	9C
3	13	5	1.91	.94	.65	-1.1	.59	-.9	.71	5B
8	13	5	1.91	.94	.96	-.1	.87	-.3	.34	7B
41	13	5	1.91	.94	.96	-.1	.87	-.3	.34	7C
2	12	5	1.05	.93	.61	-.9	.58	-1.0	.74	7A
10	12	5	1.05	.93	1.44	.8	1.48	.9	-.34	6B
16	12	5	1.05	.93	.61	-.9	.58	-1.0	.74	9B
27	12	5	1.05	.93	.61	-.9	.58	-1.0	.74	3C

30	12	5	1.05	.93	2.28	2.0	2.32	2.0	.50	14B
33	12	5	1.05	.93	1.44	.8	1.48	.9	-.34	3C
34	11	5	.15	.99	.29	-1.4	.24	-1.5	.93	14C
5	10	5	-.88	1.02	.10	-1.9	.09	-1.9	.00	9A
6	10	5	-.88	1.02	.10	-1.9	.09	-1.9	.00	8A
15	10	5	-.88	1.02	.10	-1.9	.09	-1.9	.00	3B
20	10	5	-.88	1.02	.10	-1.9	.09	-1.9	.00	13C
26	10	5	-.88	1.02	.10	-1.9	.09	-1.9	.00	2B
32	10	5	-.88	1.02	.10	-1.9	.09	-1.9	.00	5C
31	9	5	-1.85	.95	9.90	5.6	9.90	5.4	.55	14C
35	8	5	-2.68	.89	.80	-.5	.75	-.5	.42	15C
21	7	5	-3.48	.90	.56	-1.0	.54	-1.0	.74	15B
22	7	5	-3.48	.90	.56	-1.0	.54	-1.0	.74	15C
24	6	5	-4.34	.95	.92	-.1	.87	-.2	-.03	15B
12	5	5	-5.29	.98	.11	-2.0	.10	-2.0	.00	12A
13	5	5	-5.29	.98	.11	-2.0	.10	-2.0	.00	13A
14	4	5	-6.20	.93	.80	-.3	.81	-.3	.03	15A
17	4	5	-6.20	.93	.52	-1.0	.48	-1.0	.48	6C
MEAN	12.	5.	1.36	1.18	.78	-.6	.80	-.7		
S.D.	4.	0.	4.08	.40	1.53	1.3	1.59	1.3		

FREQUENCY OF TEAMING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 39 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
7	28	7	6.44	1.86	MAXIMUM ESTIMATED MEASURE					4L3A
41	28	7	6.44	1.86	MAXIMUM ESTIMATED MEASURE					4L7C
1	27	7	5.13	1.08	.82	-.2	.58	-.5	.49	4L5A
36	27	7	5.13	1.08	.85	-.2	.61	-.4	.44	4L14
37	27	7	5.13	1.08	.85	-.2	.61	-.4	.44	4L14
38	27	7	5.13	1.08	.85	-.2	.61	-.4	.44	4L14
39	27	7	5.13	1.08	.85	-.2	.61	-.4	.44	4L14
40	27	7	5.13	1.08	.85	-.2	.61	-.4	.44	4L14
3	26	7	4.26	.82	.79	-.4	.68	-.6	.48	4L5B
16	26	7	4.26	.82	2.27	1.8	1.99	1.2	.19	4L9B
23	26	7	4.26	.82	.96	-.1	.98	.0	.15	4L3C
29	26	7	4.26	.82	.94	-.1	.83	-.3	.25	4L9C
19	25	7	3.67	.73	.68	-.8	.63	-.9	.57	4L13
2	24	7	3.18	.68	.70	-.7	.69	-.7	.36	4L7A
9	24	7	3.18	.68	.73	-.6	.73	-.6	.30	4L6A
27	24	7	3.18	.68	2.24	2.0	2.07	1.8	.48	4L3C
15	23	7	2.74	.65	.32	-1.9	.34	-1.8	.77	4L3B
20	23	7	2.74	.65	.50	-1.2	.51	-1.2	.43	4L13
11	22	7	2.32	.63	2.20	1.7	2.31	1.9	-.16	2L10
17	22	7	2.32	.63	.17	-2.5	.19	-2.5	.75	4L6C
25	22	7	2.32	.63	.17	-2.5	.19	-2.5	.75	4L13
28	22	7	2.32	.63	.17	-2.5	.19	-2.5	.75	4L15
8	21	7	1.93	.62	.42	-1.4	.43	-1.4	.78	4L7B
30	21	7	1.93	.62	.59	-.9	.59	-.9	.48	3L14
31	21	7	1.93	.62	1.21	.4	1.21	.4	.52	3L14
34	21	7	1.93	.62	.12	-2.8	.12	-2.8	.00	3L14
4	20	7	1.55	.61	.72	-.6	.78	-.4	-.75	2L2A
5	20	7	1.55	.61	.54	-1.0	.55	-1.0	-.25	3L9A
6	19	7	1.19	.59	1.27	.5	1.34	.6	.06	2L8A
10	19	7	1.19	.59	.54	-1.0	.54	-1.0	.18	3L6B
33	19	7	1.19	.59	.68	-.6	.68	-.7	-.09	3L3C
18	18	7	.85	.58	2.84	2.2	2.88	2.3	.86	4L14
26	18	7	.85	.58	2.80	2.2	2.96	2.3	-.09	1L2B
12	17	7	.52	.57	.50	-1.1	.48	-1.1	.36	3L12
21	15	7	-.08	.53	.78	-.4	.88	-.2	.83	4L15
22	15	7	-.08	.53	.78	-.4	.88	-.2	.83	4L15
32	14	7	-.36	.52	.16	-2.5	.17	-2.4	.00	2L5C
35	14	7	-.36	.52	.16	-2.5	.17	-2.4	.00	2L15
13	11	7	-1.09	.48	2.73	2.5	2.74	2.4	-.25	1L13
24	11	7	-1.09	.48	1.63	1.1	1.81	1.3	.64	4L15
14	2	7	-3.57	.73	1.14	.2	1.53	.5	-.48	0L15
MEAN	21.	7.	2.20	.70	.96	-.4	.94	-.4		
S.D.	5.	0.	2.04	.18	.74	1.4	.76	1.4		

INTENSITY OF TEAMING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 41 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
1	24	7	5.33	.75	.68	-1.1	.68	-1.1	.74	4L5A
3	24	7	5.33	.75	.68	-1.1	.68	-1.1	.74	4L5B
17	24	7	5.33	.75	2.36	3.1	2.36	3.0	-.29	4L6C
18	23	7	4.75	.78	2.82	2.7	2.93	2.7	.62	4L14
23	22	7	4.11	.83	.38	-1.3	.32	-1.4	.74	4L3C
2	21	7	3.40	.85	1.09	.1	1.03	.0	.81	4L7A
28	21	7	3.40	.85	2.83	1.7	2.88	1.7	.15	3L15
36	21	7	3.40	.85	.04	-2.6	.04	-2.6	.00	3L14
37	21	7	3.40	.85	.04	-2.6	.04	-2.6	.00	3L14
38	21	7	3.40	.85	.04	-2.6	.04	-2.6	.00	3L14
39	21	7	3.40	.85	.04	-2.6	.04	-2.6	.00	3L14
40	21	7	3.40	.85	.04	-2.6	.04	-2.6	.00	3L14
41	21	7	3.40	.85	.04	-2.6	.04	-2.6	.00	3L7C
4	20	7	2.71	.81	.55	-.8	.53	-.8	.18	3L2A
7	20	7	2.71	.81	1.73	.9	1.65	.8	.28	3L3A
8	20	7	2.71	.81	1.46	.6	1.50	.6	.78	4L7B
9	20	7	2.71	.81	.75	-.4	.83	-.3	-.49	3L6A
15	20	7	2.71	.81	.55	-.8	.53	-.8	.18	3L3B
16	20	7	2.71	.81	.55	-.8	.53	-.8	.18	3L9B
5	19	7	2.11	.74	.74	-.5	.69	-.6	.28	3L9A
10	18	7	1.59	.70	.62	-.9	.60	-1.0	.61	3L6B
19	18	7	1.59	.70	1.44	.8	1.58	1.0	.70	4L13
33	18	7	1.59	.70	.62	-.9	.60	-1.0	.61	3L3C
30	17	7	1.12	.68	.80	-.5	.82	-.4	.09	2L14
34	17	7	1.12	.68	.51	-1.3	.51	-1.3	.74	3L14
6	16	7	.67	.67	.82	-.4	.82	-.4	-.28	2L8A
11	16	7	.67	.67	.82	-.4	.82	-.4	-.28	2L10
20	16	7	.67	.67	2.77	2.5	2.82	2.5	-.37	1L13
21	15	7	.23	.66	1.75	1.2	1.75	1.2	.59	3L15
22	15	7	.23	.66	1.75	1.2	1.75	1.2	.59	3L15
25	15	7	.23	.66	.50	-1.2	.50	-1.2	-.18	2L13
27	15	7	.23	.66	1.46	.8	1.47	.8	-.24	1L3C
29	14	7	-.21	.66	.07	-3.3	.07	-3.3	.00	2L9C
32	14	7	-.21	.66	.07	-3.3	.07	-3.3	.00	2L5C
31	13	7	-.64	.66	1.24	.4	1.24	.4	.10	2L14
26	12	7	-1.07	.65	.86	-.3	.87	-.3	-.43	1L2B
24	9	7	-2.40	.69	2.16	1.6	2.08	1.5	.59	3L15
12	7	7	-3.41	.73	.06	-3.0	.05	-3.0	.00	1L12
13	6	7	-3.94	.73	1.40	.6	1.38	.6	.28	1L13
35	4	7	-4.97	.72	.77	-.6	.77	-.6	.38	1L15
14	2	7	-6.13	.84	1.28	.6	1.44	.8	-.53	0L15
MEAN	17.	7.	1.40	.75	.96	-.5	.96	-.5		
S.D.	5.	0.	2.68	.07	.80	1.6	.81	1.6		

FREQUENCY OF INITIATING
INPUT: 41 LEADERS, 3 TASKS ANALYZED: 34 LEADERS, 3 TASKS, 4 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
2	12	3	8.80	1.97	MAXIMUM ESTIMATED MEASURE					L7A
6	12	3	8.80	1.97	MAXIMUM ESTIMATED MEASURE					L8A
7	12	3	8.80	1.97	MAXIMUM ESTIMATED MEASURE					L3A
9	12	3	8.80	1.97	MAXIMUM ESTIMATED MEASURE					L6A
29	12	3	8.80	1.97	MAXIMUM ESTIMATED MEASURE					L9C
41	12	3	8.80	1.97	MAXIMUM ESTIMATED MEASURE					L7C
15	11	3	7.11	1.36	2.57	2.6	7.57	2.0	-.99	L3B
23	11	3	7.11	1.36	.70	-.8	.52	-.4	.63	L3C
28	11	3	7.11	1.36	2.57	2.6	7.57	2.0	-.99	L15C
1	10	3	5.15	1.50	4.40	1.9	5.39	2.0	.63	L5A
3	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L5B
16	10	3	5.15	1.50	2.85	1.3	2.59	1.0	-.36	L9B
18	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L14A
27	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L3C
31	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L14C
36	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L14D
37	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L14E
38	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L14F
39	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L14G
40	10	3	5.15	1.50	.22	-1.2	.20	-1.1	.99	L14H
8	9	3	2.71	1.59	.15	-1.2	.14	-1.1	.00	L7B
11	9	3	2.71	1.59	.15	-1.2	.14	-1.1	.00	L10A
17	9	3	2.71	1.59	.15	-1.2	.14	-1.1	.00	L6C
19	9	3	2.71	1.59	.15	-1.2	.14	-1.1	.00	L13B
25	9	3	2.71	1.59	.15	-1.2	.14	-1.1	.00	L13C
26	9	3	2.71	1.59	3.55	1.3	3.22	1.1	.93	L2B
30	9	3	2.71	1.59	.15	-1.2	.14	-1.1	.00	L14B
34	9	3	2.71	1.59	.15	-1.2	.14	-1.1	.00	L14C
20	8	3	.66	1.31	1.12	.2	.86	-.1	.36	L13C
24	8	3	.66	1.31	1.12	.2	.86	-.1	.36	L15B
33	8	3	.66	1.31	1.12	.2	.86	-.1	.36	L3C
5	7	3	-1.17	1.42	.17	-1.3	.16	-1.3	.99	L9A
4	6	3	-3.11	1.34	.25	-1.3	.23	-1.2	.00	L2A
10	6	3	-3.11	1.34	.25	-1.3	.23	-1.2	.00	L6B
12	6	3	-3.11	1.34	.25	-1.3	.23	-1.2	.00	L12A
32	6	3	-3.11	1.34	.25	-1.3	.23	-1.2	.00	L5C
35	6	3	-3.11	1.34	.25	-1.3	.23	-1.2	.00	L15C
13	5	3	-4.76	1.26	.60	-.8	.50	-.7	.63	L13A
21	5	3	-4.76	1.26	2.29	1.6	3.16	1.6	.99	L15B
22	5	3	-4.76	1.26	2.29	1.6	3.16	1.6	.99	L15C
14	3	3	-8.67	2.07	MINIMUM ESTIMATED MEASURE					L15A
MEAN	9.	3.	2.08	1.44	.87	-.4	1.18	-.5		
S.D.	2.	0.	3.73	.11	1.13	1.3	2.00	1.1		

INTENSITY OF INITIATING
INPUT: 41 LEADERS, 3 TASKS ANALYZED: 41 LEADERS, 3 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
7	11	3	12.82	1.41	.93	-.6	.62	-.1	.52	L3A
23	11	3	12.82	1.41	1.07	.5	.72	-.1	.48	L3C
2	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L7A
3	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L5B
6	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L8A
11	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L10A
15	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L3B
16	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L9B
18	9	3	5.27	2.05	6.93	1.6	7.29	1.5	.86	L14A
19	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L13B
20	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L13C
28	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L15C
29	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L9C
30	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L14B
33	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L3C
34	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L14C
41	9	3	5.27	2.05	.11	-.9	.10	-.9	.00	L7C
1	8	3	2.66	1.34	6.39	4.6	9.90	2.1	.74	L5A
8	8	3	2.66	1.34	.97	-.1	.66	-.1	.48	L7B
27	8	3	2.66	1.34	.97	-.1	.66	-.1	.48	L3C
36	8	3	2.66	1.34	.83	-.3	.57	-.2	.52	L14D
37	8	3	2.66	1.34	.83	-.3	.57	-.2	.52	L14E
38	8	3	2.66	1.34	.83	-.3	.57	-.2	.52	L14F
39	8	3	2.66	1.34	.83	-.3	.57	-.2	.52	L14G
40	8	3	2.66	1.34	.83	-.3	.57	-.2	.52	L14H
4	7	3	.77	1.43	.00	-2.1	.01	-1.1	1.00	L2A
5	7	3	.77	1.43	.00	-2.1	.01	-1.1	1.00	L9A
9	7	3	.77	1.43	.00	-2.1	.01	-1.1	1.00	L6A
10	7	3	.77	1.43	.00	-2.1	.01	-1.1	1.00	L6B
24	7	3	.77	1.43	.00	-2.1	.01	-1.1	1.00	L15B
25	7	3	.77	1.43	.00	-2.1	.01	-1.1	1.00	L13C
26	6	3	-1.00	1.23	1.78	1.0	3.00	1.5	.00	L2B
32	6	3	-1.00	1.23	1.78	1.0	3.00	1.5	.00	L5C
13	5	3	-2.52	1.28	.36	-1.1	.33	-1.1	1.00	L13A
21	5	3	-2.52	1.28	.36	-1.1	.33	-1.1	1.00	L15B
22	5	3	-2.52	1.28	.36	-1.1	.33	-1.1	1.00	L15C
31	5	3	-2.52	1.28	.36	-1.1	.33	-1.1	1.00	L14C
35	4	3	-4.45	1.45	.04	-1.6	.04	-1.5	1.00	L15C
12	3	3	-6.14	1.16	.99	.0	.95	-.1	.00	L12A
17	3	3	-6.14	1.16	3.44	2.8	3.31	2.8	1.00	L6C
14	2	3	-7.46	1.21	.94	-.1	.94	-.1	.52	L15A
MEAN	7.	3.	2.30	1.60	.81	-.6	.89	-.4		
S.D.	2.	0.	4.33	.35	1.48	1.3	1.93	.9		

FREQUENCY OF ETHICAL BEHAVIOR
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 16 LEADERS, 6 TASKS, 4 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
2	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L7A
3	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L5B
4	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L2A
6	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L8A
7	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L3A
8	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L7B
9	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L6A
11	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L10A
12	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L12A
18	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14A
19	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L13B
24	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L15B
25	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L13C
26	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L2B
27	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L3C
29	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L9C
30	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14B
31	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14C
34	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14C
36	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14D
37	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14E
38	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14F
39	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14G
40	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L14H
41	24	6	6.58	1.87	MAXIMUM ESTIMATED MEASURE					L7C
1	23	6	5.22	1.11	.75	-.4	.51	-.6	.61	L5A
17	23	6	5.22	1.11	.75	-.4	.51	-.6	.61	L6C
20	23	6	5.22	1.11	.87	-.2	.64	-.4	.44	L13C
28	23	6	5.22	1.11	.87	-.2	.64	-.4	.44	L15C
15	22	6	4.28	.87	.57	-1.1	.51	-1.1	.83	L3B
16	22	6	4.28	.87	.57	-1.1	.51	-1.1	.83	L9B
23	21	6	3.59	.80	.60	-1.0	.59	-1.1	.70	L3C
13	20	6	2.99	.77	2.79	2.4	2.74	2.4	.40	L13A
21	20	6	2.99	.77	1.15	.3	1.17	.3	-.40	L15B
22	20	6	2.99	.77	1.15	.3	1.17	.3	-.40	L15C
10	19	6	2.40	.76	.46	-1.2	.45	-1.2	.30	L6B
5	18	6	1.82	.76	.12	-2.6	.11	-2.6	.00	L9A
33	17	6	1.25	.75	.56	-.9	.55	-.9	.08	L3C
14	13	6	-1.07	.81	4.10	2.8	3.92	2.7	.28	L15A
32	12	6	-1.74	.83	.10	-2.4	.09	-2.4	.00	L5C
35	12	6	-1.74	.83	.10	-2.4	.09	-2.4	.00	L15C
MEAN	19.	6.	2.68	.88	.97	-.5	.89	-.6		
S.D.	4.	0.	2.35	.14	1.01	1.5	.99	1.4		

INTENSITY OF ETHICAL BEHAVIOR
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 35 LEADERS, 6 TASKS, 4 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
4	24	6	6.70	1.87	MAXIMUM ESTIMATED MEASURE					L2A
8	24	6	6.70	1.87	MAXIMUM ESTIMATED MEASURE					L7B
11	24	6	6.70	1.87	MAXIMUM ESTIMATED MEASURE					L10A
18	24	6	6.70	1.87	MAXIMUM ESTIMATED MEASURE					L14A
28	24	6	6.70	1.87	MAXIMUM ESTIMATED MEASURE					L15C
31	24	6	6.70	1.87	MAXIMUM ESTIMATED MEASURE					L14C
24	23	6	5.35	1.10	.76	-.4	.56	-.6	.86	L15B
1	22	6	4.42	.87	2.04	2.1	1.77	1.6	.86	L5A
17	22	6	4.42	.87	2.04	2.1	1.77	1.6	.86	L6C
27	22	6	4.42	.87	.79	-.6	.76	-.6	.68	L3C
30	22	6	4.42	.87	1.01	.0	.97	-.1	.12	L14B
7	21	6	3.73	.81	1.12	.4	1.13	.4	-.32	L3A
14	21	6	3.73	.81	.89	-.4	.89	-.4	.32	L15A
16	21	6	3.73	.81	.93	-.2	.93	-.2	.21	L9B
19	21	6	3.73	.81	.89	-.4	.89	-.4	.32	L13B
33	21	6	3.73	.81	1.08	.3	1.08	.3	-.21	L3C
2	20	6	3.09	.81	.72	-.7	.70	-.8	.57	L7A
3	20	6	3.09	.81	1.06	.1	1.11	.2	-.45	L5B
23	20	6	3.09	.81	.80	-.5	.78	-.5	.34	L3C
12	19	6	2.39	.87	.49	-1.0	.46	-1.0	.58	L12A
15	19	6	2.39	.87	.58	-.8	.56	-.8	.29	L3B
5	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L9A
6	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L8A
10	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L6B
13	18	6	1.60	.90	9.03	4.0	8.92	4.0	.80	L13A
25	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L13C
34	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L14C
36	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L14D
37	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L14E
38	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L14F
39	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L14G
40	18	6	1.60	.90	.03	-2.6	.03	-2.6	.00	L14H
9	16	6	.17	.77	.55	-1.0	.53	-1.0	.80	L6A
21	15	6	-.39	.72	3.28	2.9	3.25	2.9	-.51	L15B
22	15	6	-.39	.72	3.28	2.9	3.25	2.9	-.51	L15C
26	14	6	-.89	.70	.50	-1.2	.51	-1.2	.57	L2B
41	14	6	-.89	.70	.50	-1.2	.51	-1.2	.57	L7C
29	13	6	-1.37	.69	.67	-.7	.68	-.7	-.86	L9C
32	12	6	-1.85	.69	.05	-3.5	.05	-3.5	.00	L5C
35	12	6	-1.85	.69	.05	-3.5	.05	-3.5	.00	L15C
20	7	6	-4.85	1.08	1.18	.2	1.91	.8	-.86	L13C
MEAN	18.	6.	1.74	.84	.99	-.8	.98	-.8		
S.D.	3.	0.	2.22	.10	1.60	1.9	1.59	1.8		

FREQUENCY OF DEVELOPING HUMAN CAPITAL
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 40 LEADERS, 6 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
41	24	6	6.11	1.85	MAXIMUM ESTIMATED MEASURE					L7C
19	22	6	4.02	.79	.46	-.9	.42	-.7	.60	L13B
4	21	6	3.49	.68	.34	-1.4	.31	-1.1	.71	L2A
10	21	6	3.49	.68	2.09	1.3	1.34	.4	.59	L6B
25	21	6	3.49	.68	.34	-1.4	.31	-1.1	.71	L13D
9	20	6	3.07	.62	1.48	.7	1.09	.1	.67	L6A
23	20	6	3.07	.62	.77	-.4	.79	-.3	.54	L3C
3	19	6	2.71	.58	.26	-1.9	.30	-1.5	.81	L5B
31	18	6	2.39	.56	1.74	1.1	1.75	1.0	.36	L14C
33	18	6	2.39	.56	.52	-1.1	.94	-.1	.00	L3D
11	17	6	2.08	.55	.70	-.6	.91	-.2	.20	L10A
15	17	6	2.08	.55	.23	-2.2	.23	-2.0	.87	L3B
27	17	6	2.08	.55	1.25	.4	1.22	.4	.47	L3C
1	16	6	1.78	.55	2.25	1.7	2.36	1.8	-.31	L5A
29	16	6	1.78	.55	.41	-1.4	.41	-1.4	.89	L9C
36	16	6	1.78	.55	.63	-.8	.64	-.7	.90	L14D
37	16	6	1.78	.55	.63	-.8	.64	-.7	.90	L14E
38	16	6	1.78	.55	.63	-.8	.64	-.7	.90	L14F
39	16	6	1.78	.55	.63	-.8	.64	-.7	.90	L14G
40	16	6	1.78	.55	.63	-.8	.64	-.7	.90	L14H
34	15	6	1.48	.55	.33	-1.7	.38	-1.5	.71	L14C
2	14	6	1.18	.55	.18	-2.4	.23	-2.1	1.00	L7A
6	14	6	1.18	.55	.18	-2.4	.23	-2.1	1.00	L8A
8	14	6	1.18	.55	.63	-.8	.62	-.8	.48	L7B
16	14	6	1.18	.55	.15	-2.6	.19	-2.4	.89	L9B
18	14	6	1.18	.55	1.28	.5	1.19	.3	.77	L14A
20	14	6	1.18	.55	.95	-.1	.90	-.2	.90	L13C
28	13	6	.87	.56	1.52	.8	1.85	1.2	.49	L15C
7	12	6	.55	.58	3.04	2.4	2.96	2.3	.48	L3A
26	12	6	.55	.58	.87	-.2	.90	-.2	.62	L2B
32	12	6	.55	.58	.75	-.5	.78	-.4	.00	L5C
30	11	6	.21	.60	1.59	.9	1.57	.8	.43	L14B
17	10	6	-.16	.63	.66	-.6	.57	-.8	.89	L6C
21	10	6	-.16	.63	.84	-.3	.65	-.6	.92	L15B
22	10	6	-.16	.63	.84	-.3	.65	-.6	.92	L15C
35	10	6	-.16	.63	.56	-.9	.56	-.8	.60	L15C
12	8	6	-1.06	.72	.17	-1.9	.15	-1.9	.89	L12A
5	7	6	-1.61	.77	.70	-.5	.49	-.8	.31	L9A
24	5	6	-2.91	.82	.71	-.5	.70	-.5	.16	L15C
14	3	6	-4.30	.86	7.30	5.9	9.90	6.6	-.59	L15A
13	1	6	-6.24	1.19	1.65	.7	2.02	.6	-.16	L13A
MEAN	14.	6.	1.03	.62	1.02	-.4	1.08	-.3		
S.D.	5.	0.	2.03	.12	1.19	1.5	1.54	1.5		

INTENSITY OF DEVELOPING HUMAN CAPITAL
INPUT: 41 LEADERS, 6 TASKS ANALYZED: 41 LEADERS, 6 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
28	21	6	5.83	.86	.71	-.7	.64	-.8	.61	L15C
23	20	6	5.11	.85	1.62	1.0	1.68	1.0	.68	L3C
4	19	6	4.38	.86	.82	-.3	.79	-.3	.08	L2A
3	18	6	3.65	.84	.97	.0	1.00	.0	.61	L5B
7	18	6	3.65	.84	2.91	1.9	2.74	1.7	.12	L3A
10	18	6	3.65	.84	2.83	1.9	2.50	1.5	.83	L6B
18	18	6	3.65	.84	.54	-.8	.45	-1.0	.96	L14A
41	18	6	3.65	.84	.24	-1.7	.20	-1.7	.00	L7C
11	17	6	2.97	.81	.73	-.5	.69	-.5	.12	L10A
15	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L3B
19	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L13B
33	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L3D
36	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L14D
37	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L14E
38	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L14F
39	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L14G
40	17	6	2.97	.81	.25	-1.8	.22	-1.8	.66	L14H
1	15	6	1.80	.73	1.83	1.2	1.79	1.1	.24	L5A
8	15	6	1.80	.73	2.29	1.7	2.19	1.6	-.02	L7B
9	15	6	1.80	.73	.53	-1.0	.51	-1.0	.58	L6A
2	14	6	1.28	.71	1.29	.5	1.56	.9	.94	L7A
25	14	6	1.28	.71	.79	-.4	.97	.0	.16	L13D
27	14	6	1.28	.71	.31	-1.8	.30	-1.7	.74	L3C
34	14	6	1.28	.71	.31	-1.8	.30	-1.7	.74	L14C
16	13	6	.78	.70	.16	-2.5	.16	-2.5	.82	L9B
29	13	6	.78	.70	.16	-2.5	.16	-2.5	.82	L9C
17	12	6	.29	.70	1.57	.9	1.52	.8	.45	L6C
26	12	6	.29	.70	.36	-1.6	.40	-1.5	.00	L2B
32	12	6	.29	.70	.36	-1.6	.40	-1.5	.00	L5C
5	11	6	-.21	.71	1.44	.8	1.39	.7	.25	L9A
6	11	6	-.21	.71	.29	-2.0	.30	-1.9	.66	L8A
20	10	6	-.72	.73	1.47	.8	1.36	.6	.43	L13C
21	10	6	-.72	.73	2.16	1.7	1.97	1.5	.85	L15B
22	10	6	-.72	.73	2.16	1.7	1.97	1.5	.85	L15C
30	10	6	-.72	.73	1.47	.8	1.36	.6	.43	L14B
31	9	6	-1.27	.77	2.32	1.8	2.66	2.0	.52	L14C
35	7	6	-2.71	.95	1.00	.0	.88	-.1	.08	L15C
12	6	6	-3.69	1.02	.16	-1.7	.12	-1.7	.00	L12A
24	5	6	-4.68	.96	.79	-.3	.69	-.5	.24	L15C
13	1	6	-8.22	1.18	1.37	.5	1.08	.1	.12	L13A
14	1	6	-8.22	1.18	1.74	.8	5.32	1.9	-.66	L15A
MEAN	14.	6.	1.00	.80	.97	-.4	1.02	-.4		
S.D.	5.	0.	3.06	.11	.80	1.4	1.02	1.4		

FREQUENCY OF COMMUNICATING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 34 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
9	20	5	7.61	1.89	MAXIMUM ESTIMATED MEASURE					L6A
36	20	5	7.61	1.89	MAXIMUM ESTIMATED MEASURE					L14D
37	20	5	7.61	1.89	MAXIMUM ESTIMATED MEASURE					L14E
38	20	5	7.61	1.89	MAXIMUM ESTIMATED MEASURE					L14F
39	20	5	7.61	1.89	MAXIMUM ESTIMATED MEASURE					L14G
40	20	5	7.61	1.89	MAXIMUM ESTIMATED MEASURE					L14H
41	20	5	7.61	1.89	MAXIMUM ESTIMATED MEASURE					L7C
26	19	5	6.18	1.15	.82	-.3	.58	-.4	.47	L2B
7	18	5	5.12	.95	2.25	1.9	1.84	1.0	.51	L3A
29	18	5	5.12	.95	.49	-1.3	.43	-1.1	.80	L9C
6	17	5	4.27	.90	1.67	1.0	1.58	.8	.73	L8A
31	17	5	4.27	.90	2.37	1.7	2.15	1.4	.31	L14C
3	16	5	3.47	.89	.19	-1.9	.19	-1.9	.85	L5B
15	16	5	3.47	.89	.19	-1.9	.19	-1.9	.85	L3B
18	16	5	3.47	.89	2.46	1.6	2.49	1.6	-.01	L14A
19	16	5	3.47	.89	.19	-1.9	.19	-1.9	.85	L13B
34	16	5	3.47	.89	.74	-.4	.73	-.4	.18	L14C
1	15	5	2.72	.85	1.18	.3	1.20	.3	.44	L5A
2	15	5	2.72	.85	.68	-.5	.64	-.6	.87	L7A
25	15	5	2.72	.85	.24	-1.7	.23	-1.7	.00	L13D
4	14	5	2.02	.81	.92	-.1	.98	.0	-.18	L2A
8	14	5	2.02	.81	.39	-1.3	.35	-1.3	.51	L7B
11	14	5	2.02	.81	.39	-1.3	.35	-1.3	.51	L10A
16	14	5	2.02	.81	.43	-1.1	.38	-1.2	.47	L9B
20	14	5	2.02	.81	.43	-1.1	.38	-1.2	.47	L13C
28	14	5	2.02	.81	.76	-.4	.75	-.4	.06	L15C
10	13	5	1.39	.78	.63	-.7	.58	-.8	.43	L6B
17	11	5	.27	.73	.59	-.8	.70	-.5	.18	L6C
23	11	5	.27	.73	.14	-2.3	.14	-2.3	.85	L3C
12	10	5	-.25	.71	1.19	.3	1.17	.3	.70	L12A
21	10	5	-.25	.71	2.56	1.8	2.71	2.0	.78	L15B
22	10	5	-.25	.71	2.56	1.8	2.71	2.0	.78	L15C
27	10	5	-.25	.71	.82	-.3	.81	-.3	.90	L3C
32	10	5	-.25	.71	.36	-1.4	.40	-1.3	.00	L5C
33	10	5	-.25	.71	.36	-1.4	.40	-1.3	.00	L3D
13	9	5	-.75	.70	1.14	.2	1.14	.2	.85	L13A
24	9	5	-.75	.70	.37	-1.4	.38	-1.4	.51	L15C
30	9	5	-.75	.70	.93	-.1	.92	-.1	-.18	L14B
35	8	5	-1.24	.70	1.08	.1	1.08	.1	-.10	L15C
5	6	5	-2.24	.71	1.71	1.0	1.74	1.0	.07	L9A
14	5	5	-2.76	.73	1.93	1.2	1.83	1.1	.73	L15A
MEAN	13.	5.	1.60	.81	.98	-.3	.95	-.3		
S.D.	4.	0.	2.20	.10	.75	1.2	.74	1.2		

INTENSITY OF COMMUNICATING
INPUT: 41 LEADERS, 5 TASKS ANALYZED: 41 LEADERS, 5 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
18	19	5	7.93	1.14	.96	.0	.82	-.2	.31	L14A
28	19	5	7.93	1.14	1.06	.1	.97	.0	.11	L15C
7	18	5	6.90	.93	1.37	1.0	1.44	1.1	-.49	L3A
1	15	5	3.90	1.18	2.52	1.0	2.62	1.1	.45	L5A
3	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L5B
11	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L10A
34	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L14C
36	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L14D
37	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L14E
38	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L14F
39	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L14G
40	15	5	3.90	1.18	.04	-1.9	.04	-1.9	.00	L14H
9	14	5	2.67	1.01	.56	-.7	.45	-.9	.69	L6A
15	14	5	2.67	1.01	.56	-.7	.45	-.9	.69	L3B
17	14	5	2.67	1.01	.56	-.7	.45	-.9	.69	L6C
19	14	5	2.67	1.01	.56	-.7	.45	-.9	.69	L13B
25	14	5	2.67	1.01	1.14	.2	1.43	.5	-.71	L13D
31	14	5	2.67	1.01	3.06	1.9	2.55	1.4	-.14	L14C
16	13	5	1.80	.88	.57	-1.0	.54	-1.0	.82	L9B
41	13	5	1.80	.88	.65	-.8	.62	-.8	.65	L7C
4	12	5	1.08	.83	.66	-.7	.65	-.8	.49	L2A
6	12	5	1.08	.83	.78	-.4	.79	-.4	.23	L8A
29	12	5	1.08	.83	1.25	.4	1.26	.5	-.65	L9C
33	12	5	1.08	.83	.74	-.5	.74	-.6	.33	L3D
2	11	5	.40	.82	.32	-1.5	.32	-1.5	.71	L7A
23	11	5	.40	.82	.32	-1.5	.32	-1.5	.71	L3C
8	10	5	-.28	.83	1.15	.2	1.16	.2	.45	L7B
10	10	5	-.28	.83	.86	-.2	.84	-.2	.89	L6B
13	10	5	-.28	.83	.08	-2.6	.08	-2.6	.00	L13A
20	10	5	-.28	.83	1.87	1.0	1.86	1.0	-.65	L13C
26	10	5	-.28	.83	.08	-2.6	.08	-2.6	.00	L2B
32	10	5	-.28	.83	.08	-2.6	.08	-2.6	.00	L5C
21	9	5	-.95	.82	3.58	2.6	3.66	2.6	.87	L15B
22	9	5	-.95	.82	3.58	2.6	3.66	2.6	.87	L15C
24	9	5	-.95	.82	.49	-1.0	.48	-1.0	.31	L15C
30	9	5	-.95	.82	.91	-.1	.93	-.1	-.71	L14B
5	8	5	-1.62	.82	3.40	2.8	3.43	2.8	.14	L9A
27	7	5	-2.30	.84	.67	-.7	.66	-.7	.49	L3C
35	6	5	-3.05	.90	.99	.0	1.09	.1	-.69	L15C
12	5	5	-3.90	.94	.06	-2.3	.06	-2.3	.00	L12A
14	2	5	-6.37	.92	.91	-.2	.91	-.2	.33	L15A
MEAN	12.	5.	1.46	.96	.89	-.6	.88	-.6		
S.D.	4.	0.	2.94	.14	.98	1.4	.98	1.4		

FREQUENCY OF DECISION MAKING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 39 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
25	28	7	6.57	1.86	MAXIMUM ESTIMATED MEASURE					L13D
41	28	7	6.57	1.86	MAXIMUM ESTIMATED MEASURE					L7C
7	26	7	4.41	.81	.24	-1.6	.19	-1.3	.89	L3A
9	26	7	4.41	.81	.79	-.3	.56	-.5	.53	L6A
30	26	7	4.41	.81	.24	-1.6	.19	-1.3	.89	L14B
26	25	7	3.85	.70	1.96	1.3	2.25	1.2	-.56	L2B
29	25	7	3.85	.70	.50	-1.0	.77	-.3	.60	L9C
2	23	7	3.00	.61	.73	-.6	.71	-.6	.65	L7A
16	23	7	3.00	.61	.86	-.3	.81	-.4	.78	L9B
3	22	7	2.64	.59	.61	-.9	.69	-.7	.30	L5B
1	21	7	2.31	.57	.82	-.4	.78	-.5	.60	L5A
6	21	7	2.31	.57	.90	-.2	.92	-.2	.77	L8A
15	21	7	2.31	.57	.47	-1.3	.51	-1.2	.60	L3B
19	21	7	2.31	.57	.34	-1.8	.36	-1.7	.74	L13B
31	21	7	2.31	.57	1.29	.5	1.25	.5	.92	L14C
36	21	7	2.31	.57	1.29	.5	1.25	.5	.92	L14D
37	21	7	2.31	.57	1.29	.5	1.25	.5	.92	L14E
38	21	7	2.31	.57	1.29	.5	1.25	.5	.92	L14F
39	21	7	2.31	.57	1.29	.5	1.25	.5	.92	L14G
40	21	7	2.31	.57	1.29	.5	1.25	.5	.92	L14H
8	20	7	1.99	.56	.33	-1.9	.33	-1.9	.79	L7B
20	20	7	1.99	.56	.35	-1.8	.37	-1.7	.62	L13C
4	18	7	1.39	.55	.32	-1.9	.31	-1.9	.69	L2A
10	18	7	1.39	.55	.07	-3.5	.07	-3.4	.92	L6B
18	18	7	1.39	.55	3.58	3.3	3.24	2.9	.35	L14A
11	17	7	1.09	.55	2.19	1.8	2.40	2.0	-.42	L10A
23	17	7	1.09	.55	.50	-1.2	.54	-1.1	.77	L3C
34	17	7	1.09	.55	.26	-2.2	.29	-2.0	.92	L14C
33	16	7	.79	.55	.56	-1.0	.52	-1.1	.38	L3D
28	15	7	.48	.56	.81	-.4	.84	-.3	-.16	L15C
5	14	7	.15	.57	.42	-1.4	.42	-1.4	.00	L9A
32	14	7	.15	.57	.42	-1.4	.42	-1.4	.00	L5C
35	14	7	.15	.57	.42	-1.4	.42	-1.4	.00	L15C
12	13	7	-.18	.58	.82	-.3	.82	-.3	.75	L12A
21	13	7	-.18	.58	1.16	.3	1.17	.3	.80	L15B
22	13	7	-.18	.58	1.16	.3	1.17	.3	.80	L15C
27	13	7	-.18	.58	.28	-1.9	.28	-1.9	.62	L3C
13	12	7	-.52	.59	1.94	1.3	1.88	1.3	.75	L13A
17	12	7	-.52	.59	.73	-.5	.73	-.5	.62	L6C
24	9	7	-1.58	.60	.34	-1.8	.34	-1.8	.64	L15C
14	7	7	-2.31	.61	4.00	3.5	4.66	4.1	-.70	L15A
MEAN	18.	7.	1.54	.60	.95	-.5	.96	-.4		
S.D.	5.	0.	1.60	.07	.83	1.4	.89	1.4		

INTENSITY OF DECISION MAKING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 41 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
28	26	7	6.32	.89	1.47	.8	1.47	.6	-.09	L15C
31	23	7	4.46	.74	2.57	2.3	2.60	2.3	.90	L14C
7	22	7	3.93	.73	1.71	1.1	1.74	1.2	.74	L3A
18	22	7	3.93	.73	3.59	3.1	3.52	3.0	.16	L14A
30	22	7	3.93	.73	.93	-.1	.95	-.1	-.43	L14B
1	21	7	3.40	.73	1.57	.9	1.59	.9	.56	L5A
3	21	7	3.40	.73	.21	-2.2	.20	-2.2	.00	L5B
25	21	7	3.40	.73	.21	-2.2	.20	-2.2	.00	L13D
19	20	7	2.87	.72	.22	-2.1	.20	-2.1	.68	L13B
23	19	7	2.35	.71	.89	-.2	.88	-.2	.11	L3C
4	18	7	1.85	.70	.55	-1.0	.55	-1.0	.59	L2A
11	18	7	1.85	.70	1.46	.8	1.49	.8	-.39	L10A
15	18	7	1.85	.70	.48	-1.2	.46	-1.2	.67	L3B
16	18	7	1.85	.70	.48	-1.2	.46	-1.2	.67	L9B
33	18	7	1.85	.70	.25	-2.1	.24	-2.1	.90	L3D
34	18	7	1.85	.70	.25	-2.1	.24	-2.1	.90	L14C
36	18	7	1.85	.70	.25	-2.1	.24	-2.1	.90	L14D
37	18	7	1.85	.70	.25	-2.1	.24	-2.1	.90	L14E
38	18	7	1.85	.70	.25	-2.1	.24	-2.1	.90	L14F
39	18	7	1.85	.70	.25	-2.1	.24	-2.1	.90	L14G
40	18	7	1.85	.70	.25	-2.1	.24	-2.1	.90	L14H
2	17	7	1.37	.69	1.11	.2	1.09	.2	-.03	L7A
10	17	7	1.37	.69	.73	-.6	.72	-.6	.94	L6B
41	17	7	1.37	.69	.35	-1.7	.34	-1.7	.79	L7C
8	16	7	.91	.68	1.23	.4	1.23	.4	.95	L7B
9	16	7	.91	.68	.38	-1.6	.38	-1.6	.64	L6A
20	16	7	.91	.68	2.39	2.0	2.46	2.1	-.43	L13C
29	16	7	.91	.68	.85	-.3	.85	-.3	.09	L9C
6	15	7	.45	.67	1.68	1.1	1.66	1.1	.52	L8A
5	14	7	.00	.68	.26	-2.1	.25	-2.1	.00	L9A
26	14	7	.00	.68	.26	-2.1	.25	-2.1	.00	L2B
32	14	7	.00	.68	.26	-2.1	.25	-2.1	.00	L5C
17	13	7	-.46	.68	2.20	1.7	2.20	1.7	.67	L6C
13	12	7	-.92	.68	5.04	4.0	5.00	4.0	.24	L13A
21	11	7	-1.39	.69	1.01	.0	.99	.0	.75	L15B
22	11	7	-1.39	.69	1.01	.0	.99	.0	.75	L15C
27	11	7	-1.39	.69	.24	-2.2	.23	-2.2	.90	L3C
24	10	7	-1.87	.69	.43	-1.4	.41	-1.5	.71	L15C
35	8	7	-2.86	.72	1.06	.1	1.07	.1	-.68	L15C
12	7	7	-3.38	.73	.21	-2.2	.20	-2.2	.00	L12A
14	5	7	-4.47	.75	1.33	.6	1.35	.6	-.35	L15A
MEAN	16.	7.	1.18	.71	.98	-.5	.97	-.5		
S.D.	4.	0.	2.18	.04	1.01	1.6	1.00	1.6		

FREQUENCY OF CHANGING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 38 LEADERS, 7 TASKS, 5 CATS WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
9	28	7	6.54	1.84	MAXIMUM ESTIMATED MEASURE					L6A
25	28	7	6.54	1.84	MAXIMUM ESTIMATED MEASURE					L13D
41	28	7	6.54	1.84	MAXIMUM ESTIMATED MEASURE					L7C
26	26	7	4.50	.77	1.09	.1	1.36	.4	-.35	L2B
19	23	7	3.27	.56	1.34	.7	1.28	.6	.53	L13B
8	22	7	2.97	.54	.68	-.8	.68	-.8	-.77	L7B
36	22	7	2.97	.54	1.40	.8	1.36	.8	.70	L14D
37	22	7	2.97	.54	1.40	.8	1.36	.8	.70	L14E
38	22	7	2.97	.54	1.40	.8	1.36	.8	.70	L14F
39	22	7	2.97	.54	1.40	.8	1.36	.8	.70	L14G
40	22	7	2.97	.54	1.40	.8	1.36	.8	.70	L14H
3	21	7	2.68	.53	.14	-3.4	.15	-3.3	.00	L5B
10	21	7	2.68	.53	.14	-3.4	.15	-3.3	.00	L6B
30	21	7	2.68	.53	.14	-3.4	.15	-3.3	.00	L14B
20	20	7	2.40	.53	.33	-2.1	.34	-2.0	.11	L13C
1	19	7	2.12	.53	2.30	2.1	2.64	2.5	.85	L5A
7	19	7	2.12	.53	1.09	.2	1.06	.1	.63	L3A
17	19	7	2.12	.53	2.94	2.9	3.27	3.1	.74	L6C
23	19	7	2.12	.53	.23	-2.6	.23	-2.5	.68	L3C
29	19	7	2.12	.53	1.11	.2	1.11	.2	-.01	L9C
16	18	7	1.83	.55	.23	-2.4	.23	-2.3	.80	L9B
18	18	7	1.83	.55	1.28	.5	1.22	.4	-.03	L14A
28	18	7	1.83	.55	.71	-.7	.67	-.8	.68	L15C
2	17	7	1.52	.56	1.00	.0	1.07	.1	-.70	L7A
15	17	7	1.52	.56	.30	-1.9	.29	-1.9	.71	L3B
4	16	7	1.19	.59	.95	-.1	1.01	.0	.53	L2A
6	16	7	1.19	.59	.38	-1.4	.37	-1.5	.46	L8A
12	16	7	1.19	.59	1.36	.6	1.43	.7	-.15	L12A
33	16	7	1.19	.59	.38	-1.4	.37	-1.5	.46	L3D
34	16	7	1.19	.59	.38	-1.4	.37	-1.5	.46	L14C
11	15	7	.84	.61	.51	-1.0	.54	-.9	-.26	L10A
5	14	7	.45	.64	.09	-2.7	.09	-2.7	.00	L9A
31	14	7	.45	.64	4.13	2.9	4.25	3.0	.00	L14C
32	14	7	.45	.64	.09	-2.7	.09	-2.7	.00	L5C
35	13	7	.03	.65	.41	-1.3	.42	-1.3	.11	L15C
27	12	7	-.39	.66	1.67	1.0	1.66	1.0	.82	L3C
24	10	7	-1.26	.66	1.06	.1	1.08	.2	-.43	L15C
21	8	7	-2.17	.69	.58	-.9	.60	-.8	-.26	L15B
22	8	7	-2.17	.69	.58	-.9	.60	-.8	-.26	L15C
13	7	7	-2.66	.70	.08	-2.9	.07	-3.0	.00	L13A
14	5	7	-3.66	.71	1.01	.0	1.01	.0	-.46	L15A
MEAN	17.	7.	1.34	.59	.94	-.6	.97	-.5		
S.D.	5.	0.	1.77	.06	.82	1.7	.87	1.7		

INTENSITY OF CHANGING
INPUT: 41 LEADERS, 7 TASKS ANALYZED: 41 LEADERS, 7 TASKS, 5 CATS
WINSTEPS v2.96

LEADER STATISTICS: MEASURE ORDER

ENTRY NUMBER	RAW SCORE	COUNT	MEASURE	ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	SCORE CORR.	LEAD
10	21	7	3.26	.81	.07	-2.5	.07	-2.5	.00	L6B
18	21	7	3.26	.81	.07	-2.5	.07	-2.5	.00	L14A
23	21	7	3.26	.81	.07	-2.5	.07	-2.5	.00	L3C
28	21	7	3.26	.81	5.37	3.2	5.37	3.2	-.02	L15C
8	20	7	2.62	.78	.25	-1.7	.20	-1.8	.80	L7B
19	20	7	2.62	.78	.25	-1.7	.20	-1.8	.80	L13B
20	20	7	2.62	.78	.52	-.9	.47	-1.0	.24	L13C
25	20	7	2.62	.78	.52	-.9	.47	-1.0	.24	L13D
36	20	7	2.62	.78	.25	-1.7	.20	-1.8	.80	L14D
37	20	7	2.62	.78	.25	-1.7	.20	-1.8	.80	L14E
38	20	7	2.62	.78	.25	-1.7	.20	-1.8	.80	L14F
39	20	7	2.62	.78	.25	-1.7	.20	-1.8	.80	L14G
40	20	7	2.62	.78	.25	-1.7	.20	-1.8	.80	L14H
30	19	7	2.04	.73	1.44	.7	1.52	.8	.58	L14B
3	18	7	1.54	.69	.41	-1.5	.40	-1.5	.87	L5B
17	18	7	1.54	.69	5.54	4.6	5.52	4.5	.65	L6C
41	18	7	1.54	.69	.63	-.8	.64	-.8	.49	L7C
2	17	7	1.08	.66	.43	-1.5	.44	-1.5	.75	L7A
4	17	7	1.08	.66	1.17	.3	1.15	.3	.66	L2A
7	17	7	1.08	.66	.65	-.8	.66	-.8	.37	L3A
15	17	7	1.08	.66	.55	-1.1	.58	-1.1	.53	L3B
34	17	7	1.08	.66	.43	-1.5	.44	-1.5	.75	L14C
1	16	7	.65	.65	4.26	3.9	4.26	3.9	.93	L5A
16	16	7	.65	.65	.53	-1.2	.53	-1.2	.36	L9B
33	16	7	.65	.65	.40	-1.6	.41	-1.6	.60	L3D
6	15	7	.24	.64	.28	-2.1	.28	-2.1	.48	L8A
11	15	7	.24	.64	.54	-1.1	.54	-1.1	-.19	L10A
31	15	7	.24	.64	.40	-1.6	.40	-1.6	.17	L14C
5	14	7	-.17	.64	.12	-3.0	.12	-3.0	.00	L9A
9	14	7	-.17	.64	.12	-3.0	.12	-3.0	.00	L6A
26	14	7	-.17	.64	.12	-3.0	.12	-3.0	.00	L2B
27	14	7	-.17	.64	2.47	2.0	2.47	2.0	.09	L3C
32	14	7	-.17	.64	.12	-3.0	.12	-3.0	.00	L5C
13	10	7	-1.83	.66	4.14	3.6	4.31	3.7	-.58	L13A
24	10	7	-1.83	.66	1.59	1.0	1.53	.9	.16	L15C
35	8	7	-2.75	.70	.40	-1.4	.38	-1.4	.29	L15C
12	7	7	-3.25	.72	.09	-2.7	.09	-2.8	.00	L12A
21	7	7	-3.25	.72	.09	-2.7	.09	-2.8	.00	L15B
22	7	7	-3.25	.72	.09	-2.7	.09	-2.8	.00	L15C
29	6	7	-3.76	.72	2.59	2.0	2.59	2.0	.03	L9C
14	4	7	-4.80	.73	1.43	.9	1.47	1.0	-.75	L15A
MEAN	16.	7.	.63	.71	.96	-.9	.96	-.9		
S.D.	5.	0.	2.15	.06	1.41	2.0	1.42	2.0		

APPENDIX F

THE ADAPTIVE LEADERSHIP COMPETENCY PROFILE 2.0

Adaptive Leadership Competency Profile
ALCP 2.0

Competencies and Items

1.0 Influencing and Motivating

1.1 Instills a unifying, challenging, and rewarding spirit.
1.2 Influences others to help achieve work-related task and or objective.
1.3 Offers encouragement to others to improve motivation and performance.
1.4 Acts as a catalyst and motivates others.
1.5 Brings out the best in people.

2.0 Learning

2.1 Creates a learning environment.
2.2 Turns situations into a learning experience.
2.3 Promotes life-long learning as a way of life.
2.4 Fosters experimentation and learning.
2.5 Promotes innovation.

3.0 Managing

3.1 Uses time and resources efficiently.
3.2 Sets priorities with an appropriate sense of what is most important or urgent.
3.3 Manages operations and provides direction.
3.4 Sees that a job is completed.
3.5 Performs essentials task in ambigious situation.
3.6 Defines performance outcomes and boundaries.
3.7 Sets goals, organizes work effectively, and use resources appropriately.

4.0 Envisioning

4.1 Defines a vision of future realities.
4.2 Sees the light at the end of the tunnel.
4.3 Creates strategic visions, who we are, where we are going, what we can be.
4.4 Sees the “Big Picture”.

5.0 Teaming

5.1 Fosters teamwork, cooperation, and collaboration.
5.2 Generates participation through coaching.
5.3 Fosters co partnering and interdependence among team members.
5.6 Guides to reach consensus.
5.7 Fosters an esprit de corps.

6.0 Ethical Behavior

6.1 Uses principles of truth and honesty.
6.2 Adheres to ethical standards.
6.3 Stands up for what is right.
6.4 Demostrates integrity.
6.5 Demonstrates a clear commitment to ethical practices.
6.6 Speaks the Truth.

7.0 Developing Human Capital

7.1 Expands human capacity through development programs.
7.2 Takes care of personnel.
7.3 Stretches the capabilities of employees.
7.4 Takes a personal interest in the career development of each team member.
7.5 Generates opportunities for individual growth.
7.6 Identifies the next generation of leaders.

8.0 Communicating

8.1 Speaks openly and directly about performance problems with others.
8.2 Offers others specific and detailed feedback.
8.3 Listens to suggestions and comments and makes changes if the situation allows it.
8.4 Communicates the organization's values in terms of specific statements on specific issues.

9.0 Decision making

9.1 Benchmarks products and processes.
9.2 Uses an interdisciplinary approach in solving problems.
9.3 Makes difficult decisions and follows up.
9.4 Gets down to the real brass tacks! Defines it, examines it, analyzes it and tries to solve the problem.
9.5 Seeks information from multiple sources to define a task or problem.

10.0 Changing

10.1 Experiments with processes and discovers new opportunities and solutions.
10.2 Regards change as a source of vitality and opportunity.
10.3 Leads change and removes barriers to change.
10.4 Changes work process to maximize efficiency and effectiveness.
10.5 Applies technologies to view, explore, analyze and create options for organizational change.
10.6 Abandons outmoded assumptions and beliefs to experiment with some alternative concepts and ideas.

11.0 Effectiveness

11.1 Overall, do you consider the person you are rating to be effective in their job role?
11.2 Is the person you are rating effective in linking the needs of people, teams, and the organization?

Measures

Frequency of Task

4 = Performs this task DAILY
3 = Performs this task WEEKLY
2 = Performs this task MONTHLY
1 = Performs this task YEARLY
0 = Performs this task NEVER

Intensity of Task

4 = EXTREMELY Intense
3 = HIGHLY Intense
2 = MODERATELY Intense
1 = SOMEWHAT Intense
0 = NOT Intense

Effectiveness

1 = Yes
0 = No

4 = EXTREMELY
3 = HIGHLY
2 = MODERATELY
1 = SOMEWHAT
0 = NOT

APPENDIX G

WINSTEPS PROGRAM CODE

```
; This file is COMP1f.txt
&INST
TITLE='INFLUENCING and MOTIVATING FREQUENCY OF TASK'
NI=6
ITEM1=1
NAME1=7
NAMLEN=4
PERSON ='LEADER'
ITEM='Task'
CODES=01234
TABLES=001000000111111010000010
DATA=D:\winsteps\datafiles\C1_F.DAT
CURVES=110
PRCOMP= S
PFILE = P1F.out
CSV=Y
&END
 KNOWS HOW TO INFLUENCE
 INSTILLS A UNIFYING
 INFL OTHER TO ACHIEVE
 OFFERS ENCOURAGEMENT
 ACTS AS A CATALYST
 BRINGS OUT BEST PEOPLE
END NAMES
```

```
; This file is COMP1I.txt
&INST
TITLE='INTENSITY INFLUENCING and MOTIVATING'
NI=6
ITEM1=1
NAME1=7
NAMLEN=4
PERSON ='LEADER'
ITEM='Task'
CODES=01234
TABLES=001000000111111010000010
DATA=D:\winsteps\datafiles\C1_I.DAT
CURVES=110
PRCOMP= S
PFILE = P1I.OUT
CSV=Y
&END
KNOWS HOW TO INFLUENCE
INSTILLS A UNIFYING
INFL OTHER TO ACHIEVE
OFFERS ENCOURAGEMENT
ACTS AS A CATALYST
BRINGS OUT BEST PEOPLE
END NAMES ;
```

```
; This file is COMP2f.txt
 &INST
 TITLE='LEARNING FREQUENCY OF TASK'
 NI=5
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C2_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P2F.OUT
 CSV=Y
 &END
 CREATES LEARNING ENVIRONMENT
 TURNS SITUATION INTO LEARNING
 PROMOTES LIFE LONG LEARNING
 FOSTERS EXPERIMENTATION
 PROMOTES INNOVATION
 END NAMES ;
```

```
; This file is COMP2I.txt
 &INST
 TITLE='INTENSITY OF LEARNING'
 NI=5
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C2_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P2I.OUT
 CSV=Y
 &END
 CREATES LEARNING ENVIRONMENT
 TURNS SITUATION INTO LEARNING
 PROMOTES LIFE LONG LEARNING
 FOSTERS EXPERIMENTATION
 PROMOTES INNOVATION
 END NAMES ;
```

```
; This file is COMP3F.txt
 &INST
 TITLE='FREQUENCY OF MANAGING'
  NI=8
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C3_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P3F.TXT
 CSV=Y
 &END
 USES TIME AND RESOURCES
 SETS PRIORITIES
 MANAGES OPERATIONS
 SEES THAT A JOB
 PERFORMS ESSENTIAL TASKS
 MAKE DO
 DEFINES PERFORMANCE OUTCOMES
 SETS GOALS
 END NAMES ;
```

```
; This file is COMP3I.txt
 &INST
 TITLE='INTENSITY OF MANAGING'
 XWIDE=1
 NI=8
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=00100000011111100100000010
 DATA=D:\winsteps\datafiles\C3_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P3I.TXT
 CSV=Y
 &END
 USES TIME AND RESOURCES
 SETS PRIORITIES
 MANAGES OPERATIONS
 SEES THAT A JOB
 PERFORMS ESSENTIAL TASKS
 MAKE DO
 DEFINES PERFORMANCE OUTCOMES
 SETS GOALS
 END NAMES ;
```

```
; This file is COMP4F.txt
 &INST
 TITLE='FREQEUNCY OF ENVISIONING'
 NI=5
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=00100000011111101000000010
 DATA=D:\winsteps\datafiles\C4_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P4F.TXT
 CSV=Y
 &END
 IMAGINES FUTURE EVENTS
 DEFINES A VISION
 SEES THE LIGHT
 CREATES STRATEGIC
 SEE THE BIG PICTURE
 END NAMES ;
```

```
; This file is COMP4I.txt
 &INST
 TITLE='INTENSITY OF ENVISIONING'
 NI=5
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=00100000011111101000000010
 DATA=D:\winsteps\datafiles\C4_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P4I.TXT
 CSV=Y
 &END
 IMAGINES FUTURE EVENTS
 DEFINES A VISION
 SEES THE LIGHT
 CREATES STRATEGIC
 SEE THE BIG PICTURE
 END NAMES ;
```

```
; This file is COMP5F.txt
 &INST
 TITLE='FREQUENCY OF TEAMING'
 NI=7
 ITEM1=1
 NAME1=8
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C5_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P5F.TXT
 CSV=Y
 &END
 FOSTER TEAMWORK
 PROVIDES SUPPORT
 GENERATES PARTICIPATION
 FOSTERS COPARTNERING
 GUIDES TO REACH CONSENSUS
 FOSTER ESPIRT DE CORPS
 WORKS AND PLAYS WELL
 END NAMES ;
```

```
; This file is COMP5I.txt
 &INST
 TITLE='INTENSITY OF TEAMING'
 NI=7
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C5_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P5I.TXT
 CSV=Y
 &END
 FOSTER TEAMWORK
 PROVIDES SUPPORT
 GENERATES PARTICIPATION
 FOSTERS COPARTNERING
 GUIDES TO REACH CONSENSUS
 FOSTER ESPIRT DE CORPS
 WORKS AND PLAYS WELL
 END NAMES ;
```

```
; This file is COMP6F.txt
 &INST
 TITLE='FREQUENCY OF INITIATING'
 NI=3
 ITEM1=1
 NAME1=4
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=d:\winsteps\datafiles\C6_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P6F.txt
 CSV=Y
 &END
 DOES THINGS BEFORES BEING ASKED
 TAKES ACTION
 APPROACHES NEW CHALLENGES
 END NAMES ;
```

```
; This file is COMP6I.txt
 &INST
 TITLE='INTENSITY OF INITIATING'
 XWIDE=1
 NI=3
 ITEM1=1
 NAME1=4
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=00100000011111100100000010
 DATA=D:\winsteps\datafiles\C6_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P6I.txt
 CSV=Y
 &END
 DOES THINGS BEFORES BEING ASKED
 TAKES ACTION
 APPROACHES NEW CHALLENGES
 END NAMES ;
```

```
; This file is COMP7F.txt
 &INST
 TITLE='FREQUENCY OF ETHICAL BEHAVIOR'
 NI=6
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C7_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P7F.TXT
 CSV=Y
 &END
 USES PRINCIPLES OF TRUTH
 ADHERES TO ETHICAL STANDARDS
 STANDS UP FOR WHAT IS RIGHT
 DEMONSTRATES INTEGRITY
 DEMONSTRATES A CLEAR COMMITMENT TO ETHICAL
 SPEAKS THE TRUTH
 END NAMES ;
```

```
; This file is COMP7I.txt
 &INST
 TITLE='INTENSITY OF ETHICAL BEHAVIOR'
 NI=6
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=00100000011111101000000010
 DATA=D:\winsteps\datafiles\C7_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P7I.TXT
 CSV=Y
 &END
 USES PRINCIPLES OF TRUTH
 ADHERES TO ETHICAL STANDARDS
 STANDS UP FOR WHAT IS RIGHT
 DEMONSTRATES INTEGRITY
 DEMONSTRATES A CLEAR COMMITMENT TO ETHICAL
 SPEAKS THE TRUTH
 END NAMES ;
```

```
; This file is COMP8F.txt
 &INST
 TITLE='FREQUENCY OF DEVELOPING HUMAN CAPITAL'
 NI=6
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C8_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P8F.TXT
 CSV=Y
 &END
 EXPANDS HUMAN CAPACITY
 TAKES CARE OF PERSONNEL
 STRETCHES THE CAPABILITIES
 TAKES A PERSONAL INTEREST
 GENERATES OPPORTUNITIES
 IDENTIFIES THE NEXT
 END NAMES ;
```

```
; This file is COMP8I.txt
 &INST
 TITLE='INTENSITY OF DEVELOPING HUMAN CAPITAL'
 NI=6
 ITEM1=1
 NAME1=7
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C8_I.DAT
 CURVES=110
 FITP=0
 FITI=-1000
 PRCOMP= S
 PFILE = P8I.TXT
 CSV=Y
 &END
 EXPANDS HUMAN CAPACITY
 TAKES CARE OF PERSONNEL
 STRETCHES THE CAPABILITIES
 TAKES A PERSONAL INTEREST
 GENERATES OPPORTUNITIES
 IDENTIFIES THE NEXT
 END NAMES ;
```

```
; This file is COMP9F.txt
 &INST
 TITLE='FREQUENCY OF COMMUNICATING'
 NI=5
 ITEM1=1
 NAME1=6
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C9_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P9F.txt
 CSV=Y
 &END
 SPEAKS OPENLY
 OFFERS OTHERS SPECIFIC
 LISTENS TO SUGGESTIONS
 PROVIDES FEEDBACK
 COMMUNICATES THE ORGANIZATION
 END NAMES ;
```

```
; This file is COMP9I.txt
 &INST
 TITLE='INTENSITY OF COMMUNICATING'
 NI=5
 ITEM1=1
 NAME1=6
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C9_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P9I.TXT
 CSV=Y
 &END
 SPEAKS OPENLY
 OFFERS OTHERS SPECIFIC
 LISTENS TO SUGGESTIONS
 PROVIDES FEEDBACK
 COMMUNICATES THE ORGANIZATION
 END NAMES ;
```

```
; This file is COMP10F.txt
 &INST
 TITLE='FREQUENCY OF DECISION MAKING'
 NI=7
 ITEM1=1
 NAME1=8
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C10_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P10F.MES
 CSV=Y
 &END
 BENCHMARKS PRODUCTS
 USES AN INTERDISCIPLINARY
 EVALUATES PROGRESS
 MAKES DIFFICULT DECISIONS
 GETS DOWN TO THE REAL BRASS
 DEFINES THE ROOT
 SEEK INFORMATION FROM MULTIPLE
 END NAMES ;
```

```
; This file is COMP10I.txt
 &INST
 TITLE='INTENSITY OF DECISION MAKING'
 NI=7
 ITEM1=1
 NAME1=8
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C10_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P10I.TXT
 CSV=Y
 &END
 BENCHMARKS PRODUCTS
 USES AN INTERDISCIPLINARY
 EVALUATES PROGRESS
 MAKES DIFFICULT DECISIONS
 GETS DOWN TO THE REAL BRASS
 DEFINES THE ROOT
 SEEK INFORMATION FROM MULTIPLE
 END NAMES ;
```

```
; This file is COMP11F.txt
 &INST
 TITLE='FREQUENCY OF CHANGING'
 NI=7
 ITEM1=1
 NAME1=8
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=00100000011111101000000010
 DATA=d:\winsteps\datafiles\C11_F.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P11F.txt
 CSV=Y
 &END
 EXPERIMENTS WITH PROCESSES
 REGARDS CHANGE AS A SOURCE
 LEADS CHANGE
 CHANGES WORK PROCESS
 IS AWARE OF CHANGING DIRECTIONS
 APPLIES TECHNOLOGIES
 IS ABLE TO ABANDON OUTMODED
 END NAMES ;
```

```
; This file is COMP11I.txt
 &INST
 TITLE='INTENSITY OF CHANGING'
 NI=7
 ITEM1=1
 NAME1=8
 NAMLEN=4
 PERSON ='LEADER'
 ITEM='Task'
 CODES=01234
 TABLES=001000000111111010000010
 DATA=D:\winsteps\datafiles\C11_I.DAT
 CURVES=110
 PRCOMP= S
 PFILE = P11I.txt
 CSV=Y
 &END
 EXPERIMENTS WITH PROCESSES
 REGARDS CHANGE AS A SOURCE
 LEADS CHANGE
 CHANGES WORK PROCESS
 IS AWARE OF CHANGING DIRECTIONS
 APPLIES TECHNOLOGIES
 IS ABLE TO ABANDON OUTMODED
 END NAMES ;
```

APPENDIX H

LIMDEP PROGRAM CODE AND OUTPUT

```
*ALCP LEADERSHIP EFFECTIVENESS*/
/*ORDERED RESPONSE MODEL*/

READ; FILE = D:\ALCP_PROBIT.DAT;

NOBS=41; NVAR=23;

NAMES=EFFECT,IF,IT,LF,LI,MF,MI,EF,EI,TF,TI,INF,INI,EBF,EBI,HCF,HCI,COMF,
COMI,DF,DI,CF,CI$

CREATE;INF=(IF+IT)/2 $

CREATE;LEARN=(LF+LI)/2 $

CREATE;MANG=(MF+MI)/2 $

CREATE;ENV=(EF+EI)/2 $

CREATE;TEAM=(TF+TI)/2 $

CREATE;INITA=(INF+INI)/2 $

CREATE;ETH=(EBF+EBI)/2$

CREATE;DEVHUM=(HCF+HCI)/2$

CREATE;COM=(COMF+COMI)/2$

CREATE;DEC=(DF+DI)/2$

CREATE;CHANG=(CF+CI)/2$

DSTATS; RHS=INF,LEARN,MANG,ENV,TEAM,INITA,ETH,DEVHUM,COM,DEC,CHANG;
OUTPUT=2 $


ORDERED; LHS=EFFECT;

         RHS=ONE,INF,LEARN,MANG,ENV,TEAM,INITA,ETH,DEVHUM,COM,DEC,CHANG;

         MARGINAL EFFECTS;

         LIST FITTED VALUES $


STOP
```

```
--> RESET
--> READ; FILE = D:\ALCP_PROBIT.DAT;
    NOBS=41; NVAR=23;
    NAMES=EFFECT,IF,IT,LF,LI,MF,MI,EF,EI,TF,TI,INF,INI,EBF,EBI,HCF,HCI,COMF,C...
--> CREATE;INF=(IF+IT)/2 $
--> CREATE;LEARN=(LF+LI)/2 $
--> CREATE;MANG=(MF+MI)/2 $
--> CREATE;ENV=(EF+EI)/2 $
--> CREATE;TEAM=(TF+TI)/2 $
--> CREATE;INITA=(INF+INI)/2 $
--> CREATE;ETH=(EBF+EBI)/2$
--> CREATE;DEVHUM=(HCF+HCI)/2$
--> CREATE;COM=(COMF+COMI)/2$
--> CREATE;DEC=(DF+DI)/2$
--> CREATE;CHANG=(CF+CI)/2$
--> DSTATS; RHS=INF,LEARN,MANG,ENV,TEAM,INITA,ETH,DEVHUM,COM,DEC,CHANG; OUTPU...
                          Descriptive Statistics
               All results based on nonmissing observations.
Variable        Mean          Std.Dev.        Minimum          Maximum      Cases
------------------------------------------------------------------------------
INF       68.8292683      22.8225792      .000000000      100.000000         41
LEARN     60.5243902      23.5865298      .000000000      100.000000         41
MANG      60.6097561      20.4714778      .000000000      100.000000         41
ENV       54.4390244      25.0512463      .000000000      100.000000         41
TEAM      66.8414634      23.6871376      .000000000      100.000000         41
INITA     58.5609756      21.8217767      .000000000      100.000000         41
ETH       77.7926829      24.7966670      .000000000      100.000000         41
DEVHUM    68.6341463      21.1633600      .000000000      100.000000         41
COM       56.1219512      25.0521407      .000000000      100.000000         41
DEC       55.8536585      22.6492947      .000000000      100.000000         41
CHANG     63.7804878      24.4103074      .000000000      97.0000000         41


Correlation Matrix for Listed Variables

              INF     LEARN      MANG       ENV      TEAM     INITA       ETH    DEVHUM
     INF  1.00000    .97706    .97800    .96156    .98167    .98323    .95108    .95290
   LEARN    .97706  1.00000    .98618    .98651    .98715    .98594    .95061    .97326
    MANG    .97800    .98618  1.00000    .97885    .98893    .98490    .94872    .96740
     ENV    .96156    .98651    .97885  1.00000    .98429    .97748    .92503    .95838
    TEAM    .98167    .98715    .98893    .98429  1.00000    .97864    .95174    .97430
   INITA    .98323    .98594    .98490    .97748    .97864  1.00000    .94257    .95881
     ETH    .95108    .95061    .94872    .92503    .95174    .94257  1.00000    .97390
  DEVHUM    .95290    .97326    .96740    .95838    .97430    .95881    .97390  1.00000

              INF     LEARN      MANG       ENV      TEAM     INITA       ETH    DEVHUM
     COM    .94966    .97028    .96829    .97776    .97677    .96037    .88367    .93212
     DEC    .96289    .98053    .97272    .97456    .97572    .96814    .91632    .95292
   CHANG    .98009    .98616    .98325    .98022    .98862    .97938    .96344    .96856

              COM       DEC     CHANG
     COM  1.00000    .97683    .95113
     DEC    .97683  1.00000    .96158
   CHANG    .95113    .96158  1.00000

--> ORDERED; LHS=EFFECT;
    RHS=ONE,INF,LEARN,MANG,ENV,TEAM,INITA,ETH,DEVHUM,COM,DEC,CHANG;
    MARGINAL EFFECTS;
    LIST FITTED VALUES $

+------------------------------------------------------------------------+
| Dependent variable is binary, y=0 or y not equal 0                     |
| Ordinary    least squares regression    Weighting variable = none      |
| Dep. var. = Y=0/Not0 Mean=   .9756097561    , S.D.=   .1561737619      |
| Model size: Observations =      41, Parameters =  12, Deg.Fr.=     29  |
| Residuals:  Sum of squares= 165.0031432    , Std.Dev.=        2.38532  |
| Fit:        R-squared=*********, Adjusted R-squared =      -232.28031 |
| Diagnostic: Log-L =    -86.7205, Restricted(b=0) Log-L =      18.4579 |
```

| LogAmemiyaPrCrt.= 1.995, Akaike Info. Crt.= 4.816 |

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]	Mean of X
Constant	1.035824960	2.2230335	.466	.6413	
INF	.9378074820E-03	.14687302	.006	.9949	68.829268
LEARN	-.9170899661E-02	.17695667	-.052	.9587	60.524390
MANG	-.5968752317E-02	.15475073	-.039	.9692	60.609756
ENV	.1042689289E-01	.13659859	.076	.9392	54.439024
TEAM	.1582365457E-01	.28121489	.056	.9551	66.841463
INITA	-.3721418140E-03	.15438166	-.002	.9981	58.560976
ETH	.2481258305E-02	.10102619	.025	.9804	77.792683
DEVHUM	-.3111319055E-02	.14449865	-.022	.9828	68.634146
COM	-.7448909303E-02	.14859235	-.050	.9600	56.121951
DEC	.7341530621E-02	.10655457	.069	.9451	55.853659
CHANG	-.1227545056E-01	.17770772	-.069	.9449	63.780488

Normal exit from iterations. Exit status=0.

Ordered Probit Model	
Maximum Likelihood Estimates	
Dependent variable	EFFECT
Weighting variable	ONE
Number of observations	41
Iterations completed	21
Log likelihood function	-40.44880
Restricted log likelihood	-46.02634
Chi-squared	11.15507
Degrees of freedom	11
Significance level	.4303647

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	1	.024	1	2	.048	2	7	.170
3	25	.609	4	6	.146			

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]	Mean of X
	Index function for probability				
Constant	2.156743280	4.0348851	.535	.5930	
INF	.6657642751E-01	.18357471	.363	.7169	68.829268
LEARN	.2556619451E-02	.16164278	.016	.9874	60.524390
MANG	.1488169890	.18418400	.808	.4191	60.609756
ENV	.1095055302	.11610258	.943	.3456	54.439024
TEAM	-.1092053817	.16863901	-.648	.5173	66.841463
INITA	-.9545151330E-01	.13955203	-.684	.4940	58.560976
ETH	.2614744493E-01	.81436506E-01	.321	.7482	77.792683
DEVHUM	-.3165199555E-01	.13041058	-.243	.8082	68.634146
COM	-.1898444652E-01	.97606471E-01	-.194	.8458	56.121951
DEC	.5420254259E-01	.91794758E-01	.590	.5549	55.853659
CHANG	-.1337831023	.15209975	-.880	.3791	63.780488
	Threshold parameters for index				
Mu(1)	.5599206015	.65532956	.854	.3929	
Mu(2)	1.438621304	.73100526	1.968	.0491	
Mu(3)	3.520252851	.83813763	4.200	.0000	

Marginal Effects for OrdProbt				
Variable	EFFECT=0	EFFECT=1	EFFECT=2	EFFECT=3
ONE	-.0644	-.1327	-.4085	.2085
INF	-.0020	-.0041	-.0126	.0064
LEARN	-.0001	-.0002	-.0005	.0002
MANG	-.0044	-.0092	-.0282	.0144
ENV	-.0033	-.0067	-.0207	.0106
TEAM	.0033	.0067	.0207	-.0106
INITA	.0029	.0059	.0181	-.0092
ETH	-.0008	-.0016	-.0050	.0025
DEVHUM	.0009	.0019	.0060	-.0031
COM	.0006	.0012	.0036	-.0018
DEC	-.0016	-.0033	-.0103	.0052
CHANG	.0040	.0082	.0253	-.0129

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted					
Actual	0	1	2	3	4	Total
0	0	0	0	1	0	1
1	0	0	0	2	0	2
2	0	0	1	6	0	7
3	0	0	0	24	1	25
4	0	0	0	5	1	6
Total	0	0	1	38	2	41

Predicted Values (* => observation was not in estimating sample.)

Observation	Observed Y	Predicted Y	Residual	SumP(i)	Prob[Y*=y]
1	4.0000	4.0000	.8188	3.8173	.8188
2	3.0000	3.0000	.6820	2.7992	.6820
3	4.0000	3.0000	.5483	3.3890	.4220
4	3.0000	3.0000	.6955	3.0538	.6955
5	3.0000	4.0000	.5405	3.5248	.4450
6	3.0000	3.0000	.7020	2.9575	.7020
7	3.0000	3.0000	.7018	2.9476	.7018
8	3.0000	3.0000	.6445	2.6671	.6445
9	3.0000	3.0000	.7002	3.0130	.7002
10	3.0000	3.0000	.6914	2.8466	.6914

```
        11      3.0000          3.0000          .6761       2.7743      .6761
        12      1.0000          3.0000          .6396       2.6526      .0557
        13      2.0000          2.0000          .3324       1.6336      .3324
        14      .00000          3.0000          .6257       2.6131      .0286
        15      3.0000          3.0000          .6751       2.7707      .6751
        16      3.0000          3.0000          .6963       2.8797      .6963
        17      3.0000          3.0000          .6038       2.5544      .6038
        18      4.0000          3.0000          .6849       2.8128      .0953
        19      3.0000          3.0000          .6623       2.7238      .6623
        20      2.0000          3.0000          .5676       2.4629      .2704
        21      2.0000          3.0000          .6394       2.6521      .2204
        22      2.0000          3.0000          .5888       2.5159      .2577
        23      4.0000          3.0000          .6732       2.7629      .0823
        24      2.0000          3.0000          .6841       2.8088      .1717
        25      3.0000          3.0000          .6844       2.8102      .6844
        26      3.0000          3.0000          .6408       3.2303      .6408
        27      4.0000          3.0000          .6420       3.2277      .2973
        28      2.0000          3.0000          .6901       3.0844      .0870
        29      4.0000          3.0000          .7018       2.9842      .1569
        30      3.0000          3.0000          .5881       2.5140      .5881
        31      3.0000          3.0000          .4977       2.2934      .4977
        32      2.0000          3.0000          .6776       2.7804      .1808
        33      3.0000          3.0000          .4293       2.1256      .4293
        34      3.0000          3.0000          .3742       1.9839      .3742
        35      1.0000          3.0000          .4790       2.2483      .1155
        36      3.0000          3.0000          .7012       2.9983      .7012
        37      3.0000          3.0000          .6278       3.2572      .6278
        38      3.0000          3.0000          .6906       3.0817      .6906
        39      3.0000          3.0000          .7018       2.9499      .7018
        40      3.0000          3.0000          .6887       3.0908      .6887
        41      3.0000          3.0000          .6773       2.7794      .6773
--> STOP
```

APPENDIX I

ADERTISEMENT DALLAS MORNING NEWS

Business

©2000, The Dallas Morning News The Dallas Morning News Thursday, July 6, 2000 Section D

UNT to study leadership via Internet

ROBERT MILLER
BUSINESS DAY

The University of North Texas' Center for Interdisciplinary Research and Analysis is offering free leadership assessments via the Internet to businesses nationwide.

The assessments will be part of research looking at how the "team approach" in the workplace has affected corporate leadership. Leadership effectiveness within individual companies will also be profiled.

The researchers point out that during the last decade, businesses have reduced bureaucratic oversight and are encouraging workers to share opinions and set independent goals.

In light of this trend, UNT researchers want to find out what impact this decentralization has had on leadership competencies. They will collect data via a brief questionnaire.

Then they will develop tailored feedback reports for participating organizations.

Todd Sherron, manager of the Center for Interdisciplinary Research and Analysis, said: "Organizations know that in order to keep growing their businesses in a highly competitive market, they need leaders who can stand up to the challenges of decentralized structures, virtual offices and instantaneous transactions.

"These leaders also must press for customer service requirements while representing the best interests of their organizations and employees."

The leadership competency research will be conducted by Mr. Sherron, **Jeff Allen** and **Roger Ditzenberger** from the applied technology, training and development team; **Margie Tieslau** from economics; and **Randy Schumacker** from educational research.

The project seeks to benchmark 21st-century leader competencies and validate the "Adaptive Leadership Competency Profile."

Ultimately, the profile will help organizations develop leaders and improve leadership development programs and focus leadership-training programs.

UNT began collecting data Monday.

Interested corporate leaders can call Mr. Sherron at 940-565-4414 or e-mail him at sherron@coefs.coe.unt.edu, or call Mr. Allen at 940-565-4918 or e-mail him at jallen@unt.edu.

■

The Federal Reserve Bank of Dallas and the **National Center for Policy Analysis** will host a policy forum luncheon July 13, featuring a multimedia tribute to **Friedrich von Hayek**, an Austrian who was one of the 20th century's most influential free-market economists.

Mr. Hayek was awarded the Nobel Prize for Economics in 1974.

Robert D. McTeer Jr., president and chief executive officer of the Dallas Fed, pointed out: "A student of **Ludwig von Mises**, Mr. Hayek concerned himself with the widespread devastation brought on by World War I.

"He called classical liberal scholars together in the climate of postwar collectivism and founded the **Mont Pelerin Society** to propagate free-market values.

"Mr. Hayek's book, *The Road to Serfdom*, helped turn the world away from socialist and communist ideology."

John Raybould, a visiting fellow from the **Adam Smith Institute**, which has nominated the economist as the "Man of the Century," will make the presentation.

Mr. Raybould has compiled *Havek: A Commemorative Album*, highlighting the life and achievements of Mr. Hayek, who died in 1992.

The buffet at the Federal Reserve Bank of Dallas, 2200 N. Pearl St., is open to the public and will begin promptly at noon and end at 1:30 p.m.

The cost is $20.

For reservations, fax the following information to the National Center for Policy Analysis at 972-386-0924 by Monday:

Your name, title, company, address, city, state and ZIP code; your phone number and fax number; any guest's name; and the fact that your check payable to the NCPA is in the mail to the NCPA, 12655 N. Central Expressway, Suite 720, Dallas, Texas 75243.

If you wish to pay by Visa or MasterCard, fax the above personal information along with your card number, the expiration date, your signature and your printed name.

Parking is complimentary at the Federal Reserve, the parking entrance is at Pearl and Thomas streets.

For additional information, call the NCPA Events Department at 972-386-6272.

■

Frontiers of Flight Museum at Dallas Love Field is offering flight school for youngsters whose head and dreams are already in the clouds, though their feet will not leave the ground during the two- or four-day sessions.

Classes are from 10 a.m. to 3 p.m. at a cost of $45 for two days.

"Student pilot" classes are for first-time flight students, and "advanced pilot" classes are for students who have attended a prior Frontiers of Flight class.

For third- and fourth-graders who completed the student pilot classes in June, advanced pilot classes will be held July 18 and 20.

For fifth- and sixth-graders, the student pilot class will be held July 11 and 13, and advanced pilot classes will be July 25 and 27.

On the first day, student pilots will tour the Love Field tower, the museum, a firetruck and a DC-3; meet real pilots and actors playing **Orville Wright** and Count **Von Zeppelin**; and learn about job opportunities and the pilots' phonetic alphabet.

On the second day, student pilots will tour **Southwest Airlines'** training center, visit and sit in helicopters at **Zebra Air**, tour the hospital airships, and build and fly gliders.

Advanced pilots on the first day will attend ground school with **Challenge Air**, work with **Women in Aviation**, build rockets and encounter many other surprises.

On the second day, advanced pilots will tour **Legend Airlines**, complete and fly their rockets, and tour a Gulfstream.

Sharon Spalding, Frontiers of Flight Museum director of development and education, is in charge of the program.

Call the museum at 214-350-3600 for more information.

Staff columnist Robert Miller writes about people and events of interest to the business community for The Dallas Morning News.

APPENDIX J

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UNT offers corporate leadership analysis

Jul 14 2000 12:00AM By BY KELLI LAMERS staff writer

DENTON - Local businesses can benefit from a free leadership assessment offered by the University of North Texas. Reviews are open to corporations with more than 100 employees. Through an online questionnaire, UNT's Center of Interdisciplinary Research and Analysis is giving the free feedback in order to determine how the spread of the "team approach" in the workplace has affected corporate leadership. Assessments can be used to improve poor leadership or simply benchmark current leadership.

"The company who embraces this is the company who realizes the importance of leadership. If they see a way to improve leadership, they're open to it," said Todd Sherron, manager of the center.

TXU Electric embraces it. The Comanche Peak engineering and support division is focusing its assessment on first-line leaders and management and combining it with its current leadership program.

"We put together what we felt was a good leadership program. We think this will be be a good idea to help supplement our program," said Randy McCamey, staff assistant. McCamey said he's hoping the assessment will keep TXU on the right track with modern leadership ideas as well as help recruiting efforts.

"It will give us more exposure to colleges, specifically UNT, and perhaps we can benefit from it," he said.

Sherron said three gains can result from the assessment: it helps develop leaders, helps focus leadership development and training, and can eventually act as a tool for selection criteria. The assessment can help benchmark whatever level of company leadership or management desired, Sherron said. It measures the frequency and intensity of several different competencies. Quantitative results are presented using Rasch Measurement, a relatively new measurement theory that Sherron said is extremely precise.

The assessment is based largely on 600 interviews conducted throughout the corporate ladder identifying what employees feel makes a good leader. "It's based on what people said," Sherron said. "It's not anything an academic cooked up from books."

Researchers said that businesses have reduced bureaucratic oversight during the last decade and are encouraging workers to share opinions and set independent goals. Sherron wants to know what impact this decentralization has had on leadership competencies, and as part of the research, tailored feedback reports will be developed for participating firms.

"Organizations know that in order to keep growing their businesses in a highly competitive market, they need leaders who can stand up to the challenges of decentralized structures, virtual offices and instantaneous transactions," said Sherron. "These leaders also must press for customer service requirements while representing the best interests of their organizations and employees."

Jeff Allen, associate professor of technology and cognition at UNT, said one of the best things about the assessment is simply that it's free.

"For each individual company, it provides a snapshot picture of their leaders," he said. "It doesn't matter if you're a good leader, a bad leader or somewhere in between - it allows you to improve."

Any corporate leaders interested in participating in the assessment can contact Sherron at (940) 565-4414 or Sherron@coefs.coe.unt.

Contact Lamers at klamers@bizpress.net.

Post Your Opinion

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Email

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Post Opinion

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APPENDIX K

ADERTISEMENT ASTD DALLAS CHAPTER

PERSPECTIVES
DALLAS CHAPTER OF THE AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT
www.dallasastd.org 972.755.0956 July 2000

Researchers at UNT Benchmarking "21st Century Leadership Competencies"

Organizations know that in order to keep growing their businesses in a highly competitive global marketplace, they need leaders who can stand up to the challenges encountered in decentralized business units, virtual offices, instantaneous transactions, and exacting customer service requirements, while continuing to represent the best interests of the organization and its employees.

Corporate Participation Sought

Dr. Jeff Allen, Dr. Roger Ditzenberger, and Mr.Todd Sherron from Applied Technology, Training and Development, Dr. Margie Tieslau from Economics, and Dr. Randy Schumacker from Educational Research are conducting a research study on leadership competencies in industry. The goal of this project is to benchmark 21st century leadership competencies and to validate The Adaptive Leadership Competency Profile (ALCP). With your input, we will develop a profile that can assist organizations to develop leaders, improve their leadership development programs, and focus their leadership-training programs.

The researchers are seeking organizations with 100 employees or more. From each participating organization five or more leaders will be identified for the study. Also, a sample of five or more employees per leader will be identified and sampled. Participants will be asked to complete a brief online questionnaire. Aggregate profiles will be generated and provided to participating organizations.

Corporate leaders interested in participating in this project can obtain further information by contacting:

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Email Jallen@unt.edu.

REFERENCES

Alderfer, C. (1969). An empirical test of a new theory of human needs. Organizational Behavior and Human Performance, 5, 142-175.

Allen, M. J., & Yen, W. M. (1979). Introduction to measurement theory. Monterey, CA: Brooks/Cole .

American Psychological Association. (1985). Standards for educational and psychological testing. Washington, DC: Author.

American Society for Training and Development. (1998). National HRD executive survey, leadership development. First quarter survey report. Retrieved May 12, 2000 from the World Wide Web: http://www.astd.org/virtual_community/research/nhrd_executive_survey_98ld.html

Badaracco, J. (1998). The discipline of building character. In Harvard Business Review on Leadership (pp. 89-113). Boston: Harvard Business School Press.

Bass, B. M. (1998). Transformational leadership: Industry, military, and educational impact. Mahwah, NJ: Erlbaum.

Bass, B. M. (Ed.) (1990). Bass and Stogdill's handbook of leadership: Theory, research and managerial applications (3rd ed.). New York: The Free Press.

Bird, C. (1940). Social psychology. New York: Appleton-Century.

Bornstein, S. M., & Smith, A. F. (1996). The puzzles of leadership. In F. Hesselbein, M. Goldsmith, & R. Beckhard (Eds.), The leader of the future: New visions,

strategies, and practices for the next era (pp. 199-207). New York: The Peter F. Drucker Foundation for Nonprofit Management.

Burns, J. M. (1978). Leadership. New York: Harper & Row.

Davis, T. R., & Luthans, F. (1979). Leadership reexamined: A behavioral approach. Academy of Management Review, 4, 237-248.

Farkas, C. M., & Wetlaufer, S. (1998). The ways chief executive officers lead . In Harvard Business Review on Leadership (pp.113-146). Boston: Harvard Business School Press.

Fiedler, F. E. (1967). A theory of leadership effectiveness. New York: McGraw-Hill.

Gagne, R., & Medsker, K. (1996). The conditions of learning: Training Application. Ft. Worth, TX: Harcourt Brace College Publishers.

Green, K. E. (1996). Dimensional analyses of complex data. Structural Equation Modeling: A Multidisciplinary Journal, 3 (1), 50-61.

Greene, W. (1997). Econometric analysis. Upper Saddle River, NJ: Prentice-Hall.

Greenleaf, R. (1996). On becoming a servant leader. San Francisco: Jossey-Bass.

Haladyna, T. M. (1994). Developing and validating multiple-choice test items. Hillsdale, NJ: Erlbaum.

Hauenstien, D. (1998). A conceptual framework for educational objectives: A holistic approach to traditional taxonomies. Lanham, MD: University Press of America.

Hersey, P., Blanchard, K., & Johnson, D. (1996). Management of organizational behavior: Utilizing human resources (7th ed.). Upper Saddle River, NJ: Simon & Schuster.

Herzberg, F. (1987). One more time: How do you motivate employees? Harvard Business Review, 65 (5), 109-120.

Hevesi, G. (1996). Checklist for leaders. Portland, OR: Productivity Press.

Jennings, E. E. (1960). An anatomy of leadership: Princes, heroes, and supermen. New York: Harper.

Industry report 1999: An overview of employer-sponsored training in the U.S.(1999). Training: The Human Side of Business, 22, 8-99.

Kotter, J. P. (1990). What leaders really do? Harvard Business Review, 68 (3), 103-111.

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). Taxonomy of educational objectives. The classification of educational goals. Handbook II: Affective domain. New York: David McKay.

Levey, S. (1992). Toward a renewed leadership gestalt. Frontiers of Health Services Management, 8 (3), 37-41.

Levitt, T. (1976). Management and the post industrial society. The Public Interest, 7 (3), 42-58.

Linacre, J. M., & Wright, B. D. (1999). A user's guide to WINSTEPS ministeps Rasch model computer programs. Chicago: Mesa Press.

Lusardi, M. M., & Smith, E. V. (1997). Development of a scale to assess concern about failing and applications to treatment programs. Journal of Outcome Measurement, 1(1), 34-55.

Machiavelli, N. (1999). The prince (G. Bull & A. Grafton, Trans). New York: Dover. (Original Work published 1515)

Maslow, A. H. (1970). Motivation and personality (2nd ed.) New York: Harper & Row.

McClelland, D.C. (1973). Testing for competence rather than for intelligence. American Psychologist, 28, 1-14.

Mintzberg, H. (1998). The manager's job: Folklore and fact. Harvard Business Review on Leadership (pp. 1-36) Boston: Harvard Business School Press.

Napolitano, C. S., & Henderson, L. J. (1998). The leadership odyssey. San Francisco: Jossey-Bass.

Pedhazur, E. J., & Pedhazur-Schmelkin, L. (1991). Measurement, design, and analysis: An integrated approach. Hillsdale, NJ: Erlbaum.

Petters, T. (1987). Thriving on chaos: Handbook for a management revolution. New York: Alfred A. Knopf.

Rasch, G. (1992). Probabilistic models for some intelligence and attainment tests. Chicago: Mesa Press.

Senge, D. K. (1996). Leading learning organizations: The bold, the powerful, and the invisible. In F. Hesselbein, M. Goldsmith, & R. Beckhard (Eds.), The leader of the

future: New visions, strategies, and practices for the next era (pp. 41-80). New York: The Peter F. Drucker Foundation for Nonprofit Management.

Senge, P. (1994). The Fifth disciple fieldbook: strategies and tools for building a learning organization. New York: Doubleday/Currency.

Sims, H. P. (1977). The leader as manager of reinforcement contingencies: An empirical example and model. In J. G. Hunt & L.L. Larson (Eds.), Leadership: The cutting edge (pp.56-77) Carbondale: Southern Illinois University Press.

Smith, D. K. (1996). The following part of leading. In F. Hesselbein, M. Goldsmith, & R. Beckhard (Eds.), The leader of the future: New visions, strategies, and practices for the next era (pp. 199-207). New York: The Peter F. Drucker Foundation for Nonprofit Management.

Spencer, L. M., McClelland, D. C., & Spencer, S. M. (1990). Competency assessment methods: History and state of the art. Boston: Hay/McBer Research Press.

The New Oxford Annotated Bible. (1991) In. B. M. Metzger & R.E. Murphy (Eds.), New York, Oxford.

Tieslau, M. (1999). Empirical econometrics. Qualitative dependent variable models: The case of the multivariate Y. Unpublished lecture notes, The University of North Texas.

Westfall, B. (1994). Leaders care for the spirit. Unpublished manuscript.

Wheatley, M. J. (1999). Leadership and the new science: Discovering order in a chaotic world (2nd ed). San Francisco: Berrett-Koehler.

Wright, B. D., & Masters, G.N. (1982). Rating scale analysis: Rasch

measurement.Chicago: Mesa Press.

Wright, D. W., & Stone, M. (1979). Best test design: Rasch measurement. Chicago: Mesa Press.

Wright, B. D., & Stone, M. H. (1980a). The idea of a variable. Measurement Primer No 3. Wilmington, DE: Wide Range.

Wright, B. D., & Stone, M. H. (1980b). Fit analysis. Measurement Primer No. 8. Wilmington, DE: Wide Range.

Wright, B. D., & Stone, M. H. (1980c). Reliability. Measurement Primer No. 22. Wilmington, DE: Wide Range.

Wright, B. D., & Stone, M. H. (1980d). Separation statistics. Measurement Primer No. 21. Wilmington, DE: Wide Range.

Wright, B. D., & Stone, M. H. (1980e). Validity. Measurement Primer No. 23. Wilmington, DE: Wide Range.

Zaleznik, A. (1977). Managers and leaders: Are they different? Harvard Business Review, 55 (5), 67-68.

Zohar, D. (1997). Rewiring the corporate brain: Using the new science to rethink how we structure and lead organizations. San Francisco: Berrett-Koehler.